

**BID #13-063B**

**MATANUSKA-SUSITNA BOROUGH  
PURCHASING DIVISION**

**PALMER, ALASKA**



BIDDING AND CONTRACT DOCUMENTS  
FOR

**Purchase Multi-Purpose Response Engine for  
Central Mat-Su Fire Department**

**OPENING DATE & TIME: January 9, 2013 @ 4:30 PM**

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**MATANUSKA-SUSITNA BOROUGH**  
**350 East Dahlia Ave.**  
**Palmer, Alaska 99645**

**A D V E R T I S E M E N T**

VENDOR		ACCOUNT #	DATE FOR ADVERTISEMENT
Frontiersman		CONTRACT	November 11, 2012
Anchorage Daily News		MATA 0070	November 11, 2012
<b>TYPE OF AD:</b>	( ) Display	( X ) Classified	( ) Public Information

The material herein must be printed in its entirety on the dates shown above. Affidavit of publication is required prior to payment.

**MATANUSKA-SUSITNA BOROUGH**  
**REQUEST FOR BID #13-063B**

***Purchase Multi Purpose Response Engine***

The Matanuska-Susitna Borough is soliciting bids to purchase a Multi-Purpose Response Engine for the Central Mat-Su Fire Department which must meet the specifications contained in the bid documents.

Bid documents are available beginning **November 13, 2012** from the Purchasing Division, Matanuska-Susitna Borough, 350 E. Dahlia Ave., Palmer AK 99645. For information call (907) 745-9601, Fax (907) 745-9617, or e-mail [Purchasing@matsugov.us](mailto:Purchasing@matsugov.us). This bid document may be available on the internet at [www.matsugov.us](http://www.matsugov.us). A document fee of \$5.00 will be charged for materials picked-up and \$10.00 for materials mailed.

Bids open: **January 9, 2013 @ 4:30 PM** in the Purchasing Division

Bids must be received in the Purchasing Division prior to the time fixed for opening of the bids to be considered. Time of receipt will be determined by the time stamp in the Purchasing Division.

Each sealed bid must be received before the date and time due and must be marked with the appropriate Bid Number to be considered.

Persons needing accommodation in order to participate should contact the borough ADA coordinator at (907) 746-7404.

The Matanuska-Susitna Borough reserves the right to accept or reject any or all bids, waive any and all technicalities or informalities it deems appropriate. Award of this project is subject to the availability of funding.

Date: 11/8/12	Requested by: Signature on File	Approved by: Signature on File
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DEPARTMENT ACCOUNT NUMBER: 405.000.000.464.940 ~ 45066/6600/6619

## **SECTION II**

### **INSTRUCTIONS TO BIDDERS**

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## **INSTRUCTIONS TO BIDDER**

### **01. EXAMINATION OF BIDDING DOCUMENTS AND SITE**

The Bidder shall examine carefully, the Bidding Documents before submitting a Bid. The submission of a Bid shall be an admission that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements and accuracy of the Bidding Documents.

The Borough assumes no responsibility for any understanding or representations concerning conditions made by any of its officers, agents, or employees prior to the execution of this Agreement, unless such understanding or representations are expressly stated in the Bidding Documents or Addenda.

The Bidder shall include in their Bid sufficient sums to cover all items required by the Agreement, and shall rely entirely upon their own examination in making their Bid. The submission of a Bid shall be taken as prima facie evidence of compliance with this paragraph.

If material required for bidding purposes by these documents is absent, the bidder is required to notify the Purchasing Officer by facsimile (907) 745-9617, or by e-mail to [purchasing@matsugov.us](mailto:purchasing@matsugov.us).

Any interested party submitting a bid/proposal on Matanuska-Susitna Borough (MSB) projects should first review the MSB Debarment/Suspension List. This listing is available off of the MSB Purchasing Division web page. Any submission of a bid/proposal, with participation or involvement of an individual, company, firm or corporation on this list will render the bid/proposal as non-responsible.

### **02. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS**

Bidders shall notify the Purchasing Officer promptly of any error, omission, or inconsistency that may be discovered during examination of the Bidding Documents and the proposed construction site. Requests from Bidders for interpretation or clarification of the Bidding Documents shall be made in writing, email, or fax to the Purchasing Officer and shall arrive at least five (5) working days prior to the date for opening Bids. Any questions received after this date may not be answered. Oral questions may be presented at a prebid conference if one is provided for in the Bidding Documents. Interpretations, corrections, or changes, if any, to the Bidding Documents shall be made by Addendum. Bidders shall not rely upon interpretations, corrections, and changes made in any other manner, including orally, at the prebid conference. Interpretations, corrections, and changes shall not be binding unless included in an Addendum. All Addenda issued during the time of bidding shall become part of the Agreement Documents. Questions or requests for clarifications shall be directed to the borough's Purchasing Officer. Questions or requests for clarification directed to any other member of the borough staff may be grounds for rejection of bid as being irregular.

It is the Bidders sole responsibility to ascertain that they have received all Addenda issued by the Purchasing Office. Addendum will be issued by facsimile, e-mail, and/or U.S. Mail. All Addenda must be acknowledged in the space provided on the Bid Form. If no Addendum has been issued, leave blank or write or type "N/A" on the Bid Form in the space provided.

### **03. PREPARATION AND SUBMISSION OF BIDS**

The Bidder with their usual signature must sign each Bid in longhand, preferably in blue ink. Bids shall be submitted on the bid forms supplied and must be manually signed. Bids shall be submitted in a sealed envelope with the Invitation Number plainly marked on bottom left corner. Bids may be faxed only if specifically stated in bid documents.

Where required on the Bid, Bidders must quote on all items and they are warned that failure to do so may disqualify the Bid. When quotations on all items are not required, Bidders shall insert the words "no bid" in

the space provided for any item where no quotation is made. If erasures or other changes appear on the forms, the person signing the Bid must initial each such erasure or change.

Bids shall specify a unit or lump sum price, typed or written in ink in figures, for each bid item called for. In case of error in the extension of prices, the unit price will govern. Bids may be rejected if they show any omissions, alteration of the forms, additions not called for, conditional or alternate bids not called for, qualified bids, or irregularities of any kind.

#### **04. DIRECTIONS FOR DELIVERY OF BIDS**

Envelopes containing the bid, must be sealed, addressed and marked indicating bid number, bid name, and bid opening time and date, and delivered to:

Matanuska-Susitna Borough  
Purchasing Division of Finance  
350 East Dahlia Avenue  
Palmer Alaska 99645-6488

#### **05. BIDDERS CHECK LIST**

A checklist is provided on the Submittal Page as a courtesy to prospective bidders. The checklist may not be all inclusive; it is the Bidder's responsibility to make sure they comply with all requirements within the solicitation documents.

#### **06. RECEIPT AND OPENING OF BIDS**

Bids shall be submitted to the Purchasing Division at or before the date and time of opening specified in the Invitation to Bid and the exact date and time of receipt of Bids will be recorded. Late Bids will not be considered. Time of Bid receipt will be determined by time stamp of the Purchasing Division.

Facsimile or other electronic transmitted bids will not be considered. Modification by facsimile of Bids already submitted will be considered if received by the Purchasing Officer at or prior to the time of Bid opening fixed in the Invitation to Bid. Facsimile modifications shall not reveal the amount of the original or revised Bid.

No liability will attach to the Borough for the premature opening of, or the failure to open, a Bid not properly addressed and identified.

Bids may be withdrawn on written or facsimile request received from Bidder prior to the time specified for Bid opening.

If more than one Bid is offered by any one party, by or in the name of their clerk, partner, or other person, all such Bids will be rejected. A party who has quoted prices to a Bidder is not thereby disqualified from quoting prices to other Bidders, or from submitting a Bid directly for the work.

#### **07. EVIDENCE OF QUALIFICATIONS**

Upon request of the Owner, a Bidder whose Bid is under consideration for the award of the Agreement shall submit promptly to the Owner satisfactory evidence of the Bidder's financial resources, their experience, their performance in completing other projects of a similar nature and the organization and equipment they have available for the performance of the Agreement.

## **08. BIDDER QUALIFICATIONS**

Before the Bid is considered for award, the Purchasing Officer reserves the right to determine whether or not a Bidder is responsible and to require the Bidder to complete a Bidder Qualification Form and/or a current financial statement prepared by a Certified Public Accountant.

The Purchasing Officer shall determine whether a Bidder is responsible on the basis of the following criteria:

- The skill and experience demonstrated by the Bidder in performing Agreements of a similar nature.
- The Bidder's record for honesty and integrity.
- The Bidder's capacity to perform in terms of facilities, personnel and financing.
- The Bidder's past performance under Borough Agreements. If the Bidder has failed in any material way to perform its obligations under any Agreement with the Borough, the Bidder may be determined as a non-responsible Bidder.

A Bidder's representations concerning their qualifications will be construed as a covenant under the Agreement. Should it appear that the Bidder has made a material misrepresentation, the Borough shall have the right to terminate the Agreement for the Contractor's breach, and the Borough may then pursue such remedies as provided in the Agreement Documents or as provided by state statute, borough code or as appropriate.

Any determination that a Bidder is non-responsible will be made by the Purchasing Officer. Such determination will be made in writing to the Bidder setting forth the reasons for such determination.

## **09. ACTION ON BIDS**

The Borough reserves the right to reject any and all Bids, and to waive any informalities and irregularities in Bidding or award of the Agreement.

Unless otherwise stated in the Bidding Documents, a purchase order, if awarded, shall be issued to the responsible Bidder who submits the lowest responsive Bid. When the Bidding Documents contain a base bid and alternates, the total of the base bid and the alternates to be awarded shall be used to determine the low Bidder.

When the Bidding Documents contain a base bid and additive alternates, the low Bidder will be determined by the total of the lowest base bid and any alternates to be awarded. Additive alternates will be exercised at the option of Owner. Owner may select all, none, or any combination of Alternates in any order. All bids shall be evaluated on the basis of the same alternates.

When the Bidding Documents contain deductive alternates, the low Bidder will be determined by the lowest base bid. If the lowest base bid exceeds the funds available, the low Bidder will be determined by the total of the base bid and any deductive alternates selected. Owner may select all, none, or any combination of Deductive Alternates in any order. All bids shall be evaluated on the basis of the same alternates.

The amount of the purchase order shall be the total sum of the amounts computed from the estimated quantities and unit prices and/or the lump sum awarded by the Purchasing Officer and specified in the Agreement.

On all Bids, Notice of Intent to Award or rejection will be given within **sixty (60)** days of Bid opening. The notice will be in writing and signed by the Purchasing Officer. A Notice of Intent to Award, and no other act of

the Borough or its representatives, constitutes an acceptance of a Bid. The acceptance of a Bid shall bind the successful Bidder to perform on the resultant purchase order.

When vendors and/or contractors propose equal pricing (or tie bids), bids will be reviewed by the Purchasing Officer to determine responsiveness. If all requirements for the bid being responsive are met, then the award or recommendation of the award will be made in favor of the bid which received the earliest time stamp prior to bid opening.

## **10. INSURANCE**

See insurance requirements contained within the Terms and Conditions.

## **11. ESTIMATES OF QUANTITIES APPROXIMATE ONLY**

It is expressly agreed that the quantities shown in the Bid Form, whether for a "Unit Price Bid" or in connection with a "Lump Sum Bid" given under the heading "Bid Form" are approximate only for use as a basis for comparison of Bids and are not to be taken to be either representations or warranties. The Owner does not expressly, nor by implication, agree that the actual amount of work will correspond therewith.

## **12. EXECUTION OF AGREEMENT**

The Bidder whose Bid is accepted shall be issued a purchase order. The Bidder shall furnish the required insurance within five (5) working days after Notice of Intent to Award is issued if required. The purchase order shall be considered fully executed when the purchasing officer signs the purchase order. The purchase order shall be governed by the terms and conditions set forth within this solicitation.

## **13. CONTRACTOR'S WARRANTY**

All work under the Agreement shall be under warranty by the Contractor for one year from the Final Acceptance Date except when a different period is identified in the SPECIAL PROVISIONS. This warranty shall require the Contractor to remedy promptly, without cost to the Owner, any and all defects in material and workmanship including any consequential damages resulting from defective materials or workmanship. If the defect, in the opinion of the Borough Representative, is of such nature as to demand immediate repair, the Borough shall have the right to take corrective action and the cost thereof shall be borne by the Contractor.

## **14. CONTRACTORS' VIOLATIONS OF TAX OBLIGATIONS**

- A. No Agreement shall be awarded to any individual, firm, corporation, or business who is found to be delinquent in any area of taxation, lease, land payment, or rental agreement, with the Borough which has not been remedied within 10 calendar days of receipt of written notice.
- B. The Agreement can be terminated for cause if it is determined that the individual, firm, corporation, or business is in arrears of any taxation, lease, land payment, or rental agreement, that is due to the Borough that is not remedied within 10 calendar days of notification by regular mail.
- C. The Borough reserves any right it may have to offset amounts owed by an individual, firm, corporation or business for delinquent Borough taxes, lease, rental agreement, or land sale payments, against any amount owing to the same under an Agreement between the Borough and the same.

## **15. BID PROTESTS**

Within two days of service of the purchasing officer's determination of the apparent successful bid, a bidder who wishes to protest the determination shall lodge a protest with the purchasing officer. The protest shall be in writing on a form provided by the purchasing officer. The protest shall describe with particularity the

alleged errors in the award recommendation. The purchasing officer shall conduct a review and, within three working days of receipt of the protest, issue a determination. Full text of the protest and appeal procedures, as well as the protest form, can be downloaded from the Borough's web site at [www.matsugov.us](http://www.matsugov.us), resting on "Quick Access", then selecting "Forms", then selecting "Purchasing". A copy can also be obtained by contacting the purchasing division at (907) 745-9601.

In order to receive notice of the apparent successful bid, the Bidder must provide the borough with a facsimile number. It is the responsibility of the Bidder to follow the selection process and stay apprized of the bid or proposal due date, the date notice of apparent successful bidder is issued and the period in which protests can be filed.

## **16. MATANUSKA-SUSITNA BOROUGH BUSINESS LICENSE**

Matanuska-Susitna Borough Code, Chapter 3.36, requires that all businesses conducting business within the boundaries of the Borough have a current business license issued by the Borough. Prior to any award as a result of this solicitation, the Contractor may be required to provide proof that they have a current Matanuska-Susitna Business License or proof that they have applied for one. Copies of this borough code and instructions on obtaining a business license may be obtained at the Collection Counter, Finance Department, or by calling 907-745-9632. MSB '3.36.040.

## **17. PROCEDURES FOR AWARD**

Purchase Order(s) shall be awarded by written notice issued by the Purchasing Officer to the lowest qualified, responsive, and responsible Bidder, provided that, if the lowest bids are approximately equal, local bidder preference may be applied.

## **18. LOCAL BIDDER PREFERENCE**

Purchase orders shall be awarded to the lowest qualified, responsive and responsible Bidder, provided that, if the lowest bids are approximately equal, that is, within the lesser of \$2,000 or 5 percent of each other, preference may be given to local Bidders who maintain and operate businesses within the boundaries of the Borough. MSB 3.08.240

## **19. QUALIFIED AND RESPONSIBLE BIDDER**

The Borough reserves the right to require the Bidder to submit information pertaining to its products, service, reputation, and experience, in order to determine, at the Borough's sole discretion, if the Bidder is a qualified vendor. Past dealings with the Borough and other government agencies will be considered in determining if the Bidder is a responsible vendor.

## **20. THIRD-PARTY FINANCING AGREEMENTS AND/OR ASSIGNMENTS OF PAYMENT NOT ALLOWED**

Because of additional administrative and accounting time required of borough departments/divisions when third party financing agreement and/or assignments of payment are permitted, they will not be allowed under any agreement resulting from this Invitation to Bid.

## **21. LICENSE REQUIREMENTS**

All Contractors, and sub-contractors must comply with state of Alaska requirements regarding licensing. Reference the state of Alaska's licensing requirements for performing work under this contract.

## 22. DESCRIPTIVE LITERATURE

- A. "Descriptive literature" means information (e.g., cuts, illustrations, drawings and brochures) that is submitted as part of a bid. Descriptive literature is required to establish, for the purpose of evaluation and award, details of the product offered that are specified elsewhere in this solicitation and pertain to significant elements such as (1) design; (2) materials; (3) components; (4) performance characteristics; and (5) methods of manufacture, assembly, construction, or operation. The term includes only information required to determine the technical acceptability of the offered product. It does not include other information such as that used in determining the responsibility of a prospective contractor or for operating or maintaining equipment.
- B. Descriptive literature must be (1) identified to show the item(s) of the offer to which it applies and (2) received by the time specified in the solicitation for receipt of bids. Failure to submit descriptive literature on time may, at the discretion of the Purchasing Officer, require rejection of the bid.
- C. The failure of descriptive literature to show that the product offered conforms to the requirements of this solicitation may, at the discretion of the Purchasing Officer, require rejection of the bid.

## 23. SPECIAL PROVISIONS

- A. Any bid not meeting the requirements of this Solicitation may be considered non-responsive.
- B. Unless otherwise provided for elsewhere in this solicitation, the F.O.B. Destination for this solicitation is:

Matanuska-Susitna Borough  
Central Mat-Su Fire Department  
101 West Swanson Avenue  
Wasilla, Alaska 99654

Any bid quoting other than F.O.B. Destination will be considered non-responsive.

- C. Bid may not be withdrawn for a period of **sixty (60)** days from the date of bid opening.
- D. Delivery is required within 275 days after receipt of order (ARO).

## **SECTION III**

### **SPECIFICATIONS/SCOPE OF WORK**

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## **Bid #13-063B**

### **SPECIFICATIONS FOR A MULTI PURPOSE RESPONSE VEHICLE**

#### **INTENT OF SPECIFICATIONS**

It shall be the intent of these specifications to cover the furnishing and delivery of a complete fire apparatus. These detailed specifications cover the requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor. The manufacturer shall provide loose equipment only when specified by the customer. Otherwise, in accordance with the current edition of NFPA 1901 standards, the bid specifications shall specify whether the fire department or apparatus dealership shall provide required loose equipment.

In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market. (No exception).

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts.

Each bid shall be accompanied by a detailed set of Contractor's Specifications consisting of a detailed description of the apparatus and equipment proposed, and to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all component parts and equipment.

#### **QUALITY AND WORKMANSHIP**

**Bidder Complies: Yes ( ) No ( )**

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units which require periodic maintenance; ease of operation (including both pumping and driving); and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under Performance Tests and Requirements. Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair. All steel welding shall follow American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding shall follow American Welding Society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding shall follow American Welding Society B2.1-2000 requirements for structural welding of sheet metal. Flux core arc welding to use alloy rods, type 7000, American Welding Society standards A5.20-E70T1. Employees classified as welders are tested and certified to meet American Welding Society codes upon hire and every three (3) years thereafter. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

#### **DELIVERY**

**Bidder Complies: Yes ( ) No ( )**

Apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own power** - rail or truck freight shall not be acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered.

**SINGLE SOURCE MANUFACTURER****Bidder Complies: Yes ( ) No ( )**

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab weldment, cab, pumphouse (including the sheetmetal enclosure, valve controls, piping and operator's panel) and body being designed, fabricated and assembled on the bidder's premises. The electrical system (hardwire or multiplex) shall be both designed and integrated by the same apparatus manufacturer. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pumphouse, cab weldment and chassis). The bidder shall provide evidence that they comply with this requirement.

**INFORMATION REQUIRED****Bidder Complies: Yes ( ) No ( )**

The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

**SAFETY VIDEO****Bidder Complies: Yes ( ) No ( )**

Documentation provided at the time of delivery shall also include an apparatus safety video, in DVD format. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included: vehicle pre trip inspection, chassis operation, pump operation, and maintenance.

**PERFORMANCE TESTS AND REQUIREMENTS****Bidder Complies: Yes ( ) No ( )**

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters:

- A) The apparatus, when fully equipped and loaded, shall have not less than 25 percent nor more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.
- B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.
- C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.
- D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

**FAILURE TO MEET TEST****Bidder Complies: Yes ( ) No ( )**

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

**VEHICLE STABILITY****Bidder Complies: Yes ( ) No ( )**

The stability of the vehicle shall be demonstrated by performing like product testing on tilt table testing. Vehicle shall be able to withstand up to 27 degrees, fully loaded before tires lift. Test

documents shall be made available if requested. Actual like product testing must have been done. Calculations shall not be acceptable.

**LIABILITY**

**Bidder Complies: Yes ( ) No ( )**

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

**SPECIFICATION BID REQUIREMENTS**

**Bidder Complies: Yes ( ) No ( )**

Bidders shall also indicate in the "yes/no" column if their bid complies **on each item** (PARAGRAPH) specified. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page.

**Proposals taking total exception to specifications shall not be acceptable.**

Also, bidders shall submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. **An exception to these requirements shall not be tolerated.**

**EXCEPTIONS**

**Bidder Complies: Yes ( ) No ( )**

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

**GENERAL CONSTRUCTION**

**Bidder Complies: Yes ( ) No ( )**

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

**COMMERCIAL GENERAL LIABILITY INSURANCE**

**Bidder Complies: Yes ( ) No ( )**

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Each Occurrence	\$1,000,000
Products/Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
General Aggregate	\$5,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall include Owner as an additional insured when required by written contract.

**COMMERCIAL AUTOMOBILE LIABILITY INSURANCE**

**Bidder Complies: Yes ( ) No ( )**

The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile liability insurance:

Each Accident Combined Single Limit:	\$1,000,000
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Coverage shall be written on a Commercial Automobile liability form.

**UMBRELLA/EXCESS LIABILITY INSURANCE**

**Bidder Complies: Yes ( ) No ( )**

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate: \$25,000,000

Each Occurrence: \$25,000,000

The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the Bidder's General Liability, Automobile Liability and Employer's Liability policies.

The required limits can be provided by one (1) or more policies provided all other insurance requirements are met.

Coverage shall be provided by a carrier(s) rated A- or better by A.M. Bests.

All policies shall provide a 30 day notice of cancellation to the named insured. The Certificate of Insurance shall provide the following cancellation clause: Should any of the above described policies be cancelled before the expiration date thereof, notice shall be delivered in accordance with the policy provisions. Bidder agrees to furnish owner with a current Certificate of Insurance with the coverages listed above along with its bid. The certificate shall show the purchaser as certificate holder.

### **ISO COMPLIANCE**

**Bidder Complies: Yes ( ) No ( )**

The manufacturer shall operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the International Organization for Standardization (ISO) specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.

### **NFPA 2009 STANDARDS**

**Bidder Complies: Yes ( ) No ( )**

This unit shall comply with the NFPA standards effective January 1, 2009, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus.

A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company shall designate, in writing, who is qualified to witness and certify test results.

### **NFPA COMPLIANCY**

**Bidder Complies: Yes ( ) No ( )**

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA".

### **VEHICLE INSPECTION PROGRAM CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification includes: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus. (no exception)

A placard shall be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

### **PUMP TEST**

**Bidder Complies: Yes ( ) No ( )**

The pump shall be tested, approved, and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine

manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

**GENERATOR TEST**

**Bidder Complies: Yes ( ) No ( )**

If the unit has a generator, the generator shall be tested, approved, and certified by Underwriters Laboratories at the manufacturer's expense. The test results shall be provided to the Fire Department at the time of delivery.

**BREATHING AIR TEST**

**Bidder Complies: Yes ( ) No ( )**

If the unit has breathing air, the apparatus manufacturer shall draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection*.

**DELIVERY**

**Bidder Complies: Yes ( ) No ( )**

The truck will be delivered to Wasilla, Alaska. The pump and foam system will be properly drained to prevent freezing damage. In the event there is any freezing damage caused during shipment the repair is the responsibility of the bidder.

**PRODUCT SUPPORT**

**Bidder Complies: Yes ( ) No ( )**

This apparatus is a critical element to the safety of the Community of Mat-Su and the hospital. The ability to provide technical support and product support over the expected life of this vehicle is vital. History is an excellent window into the future. Therefore; proof of the stability of the manufacturer is required with the bid.

Each bidder must provide documentation that the manufacturer has had continued ownership over the previous 10 years. **An exception to these requirements shall not be tolerated.**

**DEALER QUALITY ASSURANCE**

**Bidder Complies: Yes ( ) No ( )**

In order to reduce the number and/or length of factory inspection trips, the dealer shall have an employee that resides at the factory that can perform and provide the following: periodically inspects and provides photo documentation and reports at the various stages of construction, photos and reports of specific areas of customer interest, reviews and resolves quality control issues, reports on status of requested changes and/or quality issues, prepares and provides a final build report.

**OWNED AND BUILT IN USA**

**Bidder Complies: Yes ( ) No ( )**

The manufacturer must be owned by an American company and built within the USA.

**INSPECTION TRIP(S)**

**Bidder Complies: Yes ( ) No ( )**

The bidder shall provide two (2) factory inspection trip(s) for four people customer representative(s). The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer. All costs such as travel, lodging and meals shall be the responsibility of the bidder.

**AFTERMARKET SUPPORT WEBSITE**

**Bidder Complies: Yes ( ) No ( )**

A Customer Service website shall provide authorized dealers access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool shall provide the authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips.

This website shall also be accessible to the end user through the guest login. Limited access is available and vehicle specific parts information accessible by entering a specific VIN number. All end users should see their local authorized dealer for additional support and service.

The website shall provide the following to the designated individuals:

- Authorized dealer only - ability to access truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc.
- Authorized dealer and customer - parts look-up capability, with the aid of digital photographs, part drawings, and assembly drawings.
- Authorized dealer only - ability to electronically submit warranty claims directly to the factory for reimbursement.
- Authorized dealer only - accessibility to multiple dealer reports that allow the dealership to maintain communication with the customer on the status of orders, claims, and phone contacts.
- Authorized dealer and customer - access to all currently published Operation and Maintenance and Service publications.
- Authorized dealer only - access to manufacturer Service Bulletins and Work Instructions containing information on current service topics and recommendations provided.
- Authorized dealer and customer - access to upcoming training classes offered by the manufacturer.
- Authorized dealer only - access to interactive electronic learning modules (Operators Guides) covering the operation of major vehicle components.
- Authorized dealer only - access to customer service articles, corporate news, quarterly newsletters, and key contacts.

#### **PERFORMANCE BOND, NOT REQUESTED**

**Bidder Complies: Yes ( ) No ( )**

The successful bidder shall furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond shall be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Bumper to Bumper warranty period included within this proposal. Owner agrees that the penal amount of this bond shall be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type shall not exceed three (3) years from the date of such satisfactory acceptance and delivery, or the actual Bumper to Bumper warranty period, whichever is shorter.

#### **APPROVAL DRAWING**

**Bidder Complies: Yes ( ) No ( )**

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

#### **DRAWING, PRELIMINARY LAYOUT, PUMP OPERATOR'S PANEL** Bidder Complies: Yes ( ) No ( )

A detailed drawing, to scale, of the pump operator's panel shall be provided for the purpose of illustrating the standard location(s) of controls and discharges on the pump operator's panel. The drawing shall not be meant as an approval, or final construction drawing, rather it shall be used as an

illustration drawing of a standard panel layout. This drawing shall include all of the gauges and controls located on the pump operator's panel.

### **ELECTRICAL WIRING DIAGRAMS**

**Bidder Complies: Yes ( ) No ( )**

Three (3) compact discs containing "As-Built" electrical wiring diagrams specifically prepared for the chassis and body shall be provided. The diagrams shall consist of information pertaining to the 12 VDC systems only. Two (2) CDs shall be shipped with the loose equipment with each truck. One (1) CD shall be included with the job folder at apparatus builder's facility for future reference.

Each CD shall include the following capabilities:

- The capability of viewing each separate diagram.
- The capability of zooming in on any section of each separate diagram.
- The capability of printing each separate diagram.
- The capability of printing each zoomed in area of each separate diagram.

Each CD shall include the following items:

- Title page, identifying the job number and chassis model.
- Table of contents.
- Truck specific electrical compartment and instrument layouts for the chassis.
- Truck specific electrical compartment layouts for the body.
- Applicable drawings from the appropriate standard wiring diagrams.
- All truck specific wiring diagrams (special drawings).
- Harness drawings for all wiring harnesses used on the chassis.
- Harness drawings for all wiring harnesses used on the body.
- All truck input and output programming sheets (multiplexed trucks only).

There shall be two (2) hard copies of these diagrams required for this unit.

### **CHASSIS**

**Bidder Complies: Yes ( ) No ( )**

The chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility, eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required.

### **WHEELBASE**

**Bidder Complies: Yes ( ) No ( )**

The wheelbase of the vehicle shall be no greater than 195.00".

### **GVW RATING**

**Bidder Complies: Yes ( ) No ( )**

The gross vehicle weight rating shall be a minimum of 55880#.

### **FRAME**

**Bidder Complies: Yes ( ) No ( )**

The chassis frame shall be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails shall have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail shall have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails shall be constructed of 120,000 psi yield strength heat-treated .38" thick steel, with 3.50" wide flanges.

### **FRONT NON DRIVE AXLE**

**Bidder Complies: Yes ( ) No ( )**

The front axle shall be of the independent suspension design with a ground rating of 22,800 lb.

Upper and lower control arms shall be used on each side of the axle. Upper control arm castings shall be made of 100,000-psi yield strength 8630 steel and the lower control arm casting shall be made of 55,000-psi yield ductile iron.

The center cross members and side plates shall be constructed out of 80,000-psi yield strength steel.

Each control arm shall be mounted to the center section using elastomer bushings. These rubber bushings shall rotate on low friction plain bearings and be lubricated for life. Each bushing shall also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There shall be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm shall be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Camber at load shall be zero degrees for optimum tire life.

The ball joint bearing shall be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis shall be provided.

The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage shall provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle shall have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels shall not infringe on this cramp angle.

### **FRONT SUSPENSION**

**Bidder Complies: Yes ( ) No ( )**

Front independent suspension shall be provided with a minimum ground rating of 22,800 lb.

The independent suspension system shall be designed to provide maximum ride comfort. The design shall allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel shall have torsion bar type spring. In addition, each front wheel end shall also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design shall be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension shall be put through a durability test that has simulated a minimum of 140,000 miles of inner city driving.

### **SHOCK ABSORBERS**

**Bidder Complies: Yes ( ) No ( )**

Heavy-duty telescoping shock absorbers (KONI) shall be provided on the front suspension.

### **OIL SEALS**

**Bidder Complies: Yes ( ) No ( )**

Oil seals with viewing window shall be provided on the front axle.

### **FRONT TIRES**

**Bidder Complies: Yes ( ) No ( )**

Front tires shall be Michelin 425/65R22.50 radials, 20 ply all-position XZY3 wide base tread, rated for 22,800 lb maximum axle load and 65 mph maximum speed.

The tires shall be mounted on 22.50" x 12.25" steel disc-type wheels with a ten (10)-stud, 11.25" bolt circle.

**TURNING RADIUS REPORT**

**Bidder Complies: Yes ( ) No ( )**

Supplied with the bid shall be a turning radius analysis of the vehicle being proposed. This analysis shall provide the inside turning radius, the outside turning radius, the curb to curb turning radius, and the wall to wall turning radius.

**REAR AXLE**

**Bidder Complies: Yes ( ) No ( )**

The rear axle shall be a Meritor™, Model RS-30-185, with a capacity of 33,080 lb.

**TOP SPEED OF VEHICLE**

**Bidder Complies: Yes ( ) No ( )**

A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 65 MPH.

**REAR SUSPENSION**

**Bidder Complies: Yes ( ) No ( )**

The rear suspension shall be Standens, semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack with a ground rating of 33,500 lbs. The spring hangers shall be castings.

The two (2) top leaves shall wrap the forward spring hanger pin, and the rear of the spring shall be a slipper style end that shall ride in a rear slipper hanger. To reduce bending stress due to acceleration and braking, the front eye shall be a berlin eye that shall place the front spring pin in the horizontal plane within the main leaf.

A steel encased rubber bushing shall be used in the spring eye. The steel encased rubber bushing shall be maintenance free and require no lubrication.

**OIL SEALS**

**Bidder Complies: Yes ( ) No ( )**

Oil seals shall be provided on the rear axle.

**REAR TIRES**

**Bidder Complies: Yes ( ) No ( )**

Rear tires shall be four (4) Michelin 315/80R22.50 radials, 20 ply XDN2 Grip traction tread, rated for 33,080 lb maximum axle load and 75 mph maximum speed.

The tires shall be mounted on 22.50" x 9.00" steel disc-type wheels with a ten (10)-stud 11.25" bolt circle.

**TIRE BALANCE**

**Bidder Complies: Yes ( ) No ( )**

All tires shall be balanced with Counteract balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights.

**TIRE PRESSURE MANAGEMENT**

**Bidder Complies: Yes ( ) No ( )**

There shall be a VECSAFE LED tire alert pressure management system provided that shall monitor each tire's pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire for a total of six (6) tires.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops eight (8) psi.

Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.

**TIRE SIPING**

**Bidder Complies: Yes ( ) No ( )**

The rear tires shall be siped for added traction.

**AUTOMATIC TIRE CHAINS**

**Bidder Complies: Yes ( ) No ( )**

One (1) pair of Onspot automatic tire chains shall be provided at the rear. System shall be electric over air operated with switch on cab instrument panel. System shall be operable at speeds up to 35 mph.

**MUD FLAPS****Bidder Complies: Yes ( ) No ( )**

Mud flaps shall be installed behind the front and rear wheels of the apparatus.

**REAR WHEEL COVERS****Bidder Complies: Yes ( ) No ( )**

A pair of stainless steel shallow depth wheel covers shall be furnished on the rear wheels including full hub covers. The wheels shall be painted black to better accent the wheel covers.

**WHEEL COVERS (front)****Bidder Complies: Yes ( ) No ( )**

Stainless steel wheel covers shall be furnished on the front wheels. The wheels shall be painted black to better accent the wheel covers.

**WHEEL CHOCKS****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) pair of folding Ziamatic SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided.

**WHEEL CHOCK BRACKETS****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) pair of Ziamatic SQCH-44-H horizontal mounting wheel chock brackets provided for the Ziamatic SAC-44-E folding wheel chocks. The brackets shall be mounted one below front and rear driver's side compartment.

**ANTI-LOCK BRAKE SYSTEM****Bidder Complies: Yes ( ) No ( )**

The vehicle shall be equipped with a Wabco 4S4M, anti-lock braking system. The ABS shall provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal is shall be sent to the control unit. This control unit then shall reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

**AUTOMATIC TRACTION CONTROL****Bidder Complies: Yes ( ) No ( )**

An anti-slip feature shall be included with the ABS. The Automatic Traction Control shall be used for traction in poor road and weather conditions. The Automatic Traction Control shall act as an electronic differential lock that shall not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) shall work with the engine ECU, sharing information concerning wheel slip. Engine ECU shall use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. A "mud/snow" switch shall be provided on the instrument panel. Activation of the switch shall allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

**ANTI-LOCK BRAKE SYSTEM & AUTOMATIC TRACTION CONTROL WARRANTY Bidder Complies: Yes ( ) No ( )**

The Wabco ABS/ATC system shall come with a **three (3) year or 300,000 mile parts and labor** warranty provided by Meritor Wabco Vehicle Control Systems.

**BRAKES****Bidder Complies: Yes ( ) No ( )**

The service brake system shall be full air type.

The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system shall be certified, third party inspected, for improved stopping distance.

The rear brakes shall be Meritor™ 16.50" x 8.63" cam operated with automatic slack adjusters.

**AIR COMPRESSOR, BRAKE SYSTEM****Bidder Complies: Yes ( ) No ( )**

The air compressor shall be a Cummins/Wabco with 18.7 cubic feet per minute output.

**BRAKE SYSTEM****Bidder Complies: Yes ( ) No ( )**

The brake system shall include:

- Bendix dual brake treadle valve with vinyl covered foot surface
- Heated automatic moisture ejector on air dryer
- Total air system capacity of 5,198 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, shall be provided with an automatic spring brake application at 40 psi

The air tank shall be primed and painted to meet a minimum 750 hour salt spray test.

To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets. (no exception).

- Wabco System Saver 1200 air dryer with spin-on coalescing filter cartridge
- 100 Watt Heater

**BRAKE LINES****Bidder Complies: Yes ( ) No ( )**

Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

**AIR INLET****Bidder Complies: Yes ( ) No ( )**

One (1) air inlet with male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located on the driver side pump panel. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female coupling shall also be provided with the loose equipment.

**ADJUSTABLE BRAKE & THROTTLE PEDALS****Bidder Complies: Yes ( ) No ( )**

Brake and throttle pedals shall be capable of stroking approximately 1.50" forward and 1.50" rearward of standard pedals location for a total stroke of 3.00" on both brake and accelerator pedals. Both pedals shall stroke in unison at the touch of a rocker switch located on a lower switch panel within easy reach of the driver.

**ENGINE****Bidder Complies: Yes ( ) No ( )**

The chassis shall be powered by an electronically controlled engine as described below:

Make: Cummins

Model: ISL9

Power: 450 hp at 2100 rpm

Torque: 1250 lb-ft at 1400 rpm

Governed Speed: 2200 rpm

Emissions Level: EPA 2013

Fuel: Diesel

Cylinders: Six (6)

Displacement: 543 cubic inches (8.9L)

Starter: Delco 39MT

Fuel Filters: Spin-on style primary filter with water separator & water-in-fuel sensor. Secondary spin-on style filter.

Coolant Filter: Spin-on style with shut off valves on the supply and return line.

The engine shall include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system shall give the owner or repair technician access to state of health information for various vehicle sub systems. The system shall monitor vehicle systems, engine and aftertreatment. The system shall illuminate a malfunction indicator light on the dash console if a problem is detected.

### **REPTO DRIVE**

**Bidder Complies: Yes ( ) No ( )**

A rear engine power take off shall be provided to drive the water pump. A vibration dampener shall be provided between the REPTO and water pump. Transmission PTO's used to drive the water pump shall not be allowed due to their lower torque ratings. The rear engine power take off shall be the same as used extensively throughout the construction industry. Rear engine PTO's allow for continuous 200 hp and 435 lb-ft torque ratings needed for large pump applications. The rear engine power take off shall have the same warranty as the engine provided by the engine manufacturer.

### **HIGH IDLE**

**Bidder Complies: Yes ( ) No ( )**

A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. A switch shall be installed, at the cab instrument panel, for activation/deactivation.

The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided, adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle."

### **ENGINE BRAKE**

**Bidder Complies: Yes ( ) No ( )**

A Jacobs engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver shall be able to turn the engine brake system on/off and have a high, medium and low setting.

The high setting of the brake application shall activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine.

The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system shall automatically disengage the auxiliary braking device, when required.

### **CLUTCH FAN**

**Bidder Complies: Yes ( ) No ( )**

A Horton fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" and "Pump" position.

When the Jake brake switch is energized, by the driver, it shall not only override the automatic function but also engage the fan. The fan clutch shall return to normal operation when either the Jake brake switch is in the "off" position or the ignition is turned off.

**ENGINE HEATER****Bidder Complies: Yes ( ) No ( )**

A 1,000 watt, 120 volt, immersion type engine heater shall be installed with the AC power inlet located to the rear of the driver's door.

**ENGINE AIR INTAKE****Bidder Complies: Yes ( ) No ( )**

An air intake with an ember separator (to prevent road dirt, burning embers, and recirculating hot air from entering the engine) shall be mounted at the front of the apparatus, on the passenger side of the engine.

The ember separator shall be mounted in the air intake with flame retardant, roto-molded polyethylene housing. It shall be easily accessible by the hinged access panel at the front of the vehicle.

**EXHAUST SYSTEM****Bidder Complies: Yes ( ) No ( )**

The exhaust system shall be stainless steel from the turbo to the inlet of the selective catalytic reduction (SCR) device, and shall be 4.00" in diameter. The exhaust system shall include a diesel particulate filter (DPF) and an SCR device to meet current EPA standards. An insulation wrap shall be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust shall terminate vertically ahead of the water tank to a point above the body. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser

**RADIATOR****Bidder Complies: Yes ( ) No ( )**

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy. The core shall be made of aluminum fins, having a serpentine design, brazed to aluminum tubes. The tubes shall be brazed to aluminum headers. No solder joints or leaded material of any kind shall be acceptable in the core assembly. The radiator core shall have a minimum frontal area of 1434 square inches. Supply and return tanks made of glass-reinforced nylon shall be crimped on to the core assembly using header tabs and a compression gasket to complete the radiator core assembly. The radiator shall be compatible with commercial antifreeze solutions.

There shall be a full steel frame around the entire radiator core assembly. The radiator core assembly shall be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

The radiator assembly shall include an integral deaeration tank permanently mounted to the top of the radiator framework, with a readily accessible remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

**COOLANT LINES****Bidder Complies: Yes ( ) No ( )**

Silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.

Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

**FUEL TANK****Bidder Complies: Yes ( ) No ( )**

A 65-gallon fuel tank shall be provided and mounted at the rear of the chassis. The tank shall be constructed of 12-gauge, hot rolled steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps. (no exception).

A .75" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the left hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A .50" diameter vent shall be provided running from top of tank to just below fuel fill inlet.

The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines shall be provided as recommended by the engine manufacturer.

**DIESEL EXHAUST FLUID TANK****Bidder Complies: Yes ( ) No ( )**

A 4.5 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side body forward of the rear axle. The tank shall be constructed of 16-gauge type 304- L stainless steel.

A .50" drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Diesel Exhaust Fluid Only".

The tank shall meet the engine manufacturer's requirement for 10 percent expansion space in the event of tank freezing.

The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

**FUEL SHUTOFF****Bidder Complies: Yes ( ) No ( )**

A fuel line shutoff valve shall be installed on both the inlet and outlet of the primary fuel filter.

**TRANSMISSION****Bidder Complies: Yes ( ) No ( )**

An Allison Gen IV, model EVS 3000P, electronic torque converting automatic transmission shall be provided.

The transmission shall be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display shall indicate when service is due.

Two (2) PTO openings shall be located on left side and top of converter housing (positions 9 o'clock and 3 o'clock).

A transmission temperature gauge with red light and audible alarm shall be installed on the cab dash.

**TRANSMISSION SHIFTER****Bidder Complies: Yes ( ) No ( )**

A six (6)-speed push button shift module with the five (5) + one (1) "Mode" button shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.

The Allison shifter shall be a double-digit display model.

The transmission ratio shall be: 1st - 3.51 to 1.00, 2nd - 1.91 to 1.00, 3rd - 1.43 to 1.00, 4th - 1.00 to 1.00, 5th - 0.75 to 1.00, 6th - 0.64 to 1.00, R - 4.80 to 1.00.

**TRANSMISSION PROGRAMMING****Bidder Complies: Yes ( ) No ( )**

The transmission shall be programmed to automatically shift the transmission to neutral when the parking brake is set to simplify operation and increase operational safety. (no exception).

**TRANSMISSION COOLER****Bidder Complies: Yes ( ) No ( )**

A Champ shell and tube transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature. The cooler shall have an aluminum shell and copper tubes. The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil.

**DOWNSHIFT MODE (w/engine brake)****Bidder Complies: Yes ( ) No ( )**

The transmission shall be provided with an aggressive downshift mode.

This shall provide earlier transmission downshifts to 2nd gear from 6th gear, resulting in improved engine braking performance.

**DRIVELINE****Bidder Complies: Yes ( ) No ( )**

Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1710 universal joints.

The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glidecoat or equivalent.

**STEERING****Bidder Complies: Yes ( ) No ( )**

Dual Sheppard M110 steering gears, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate an air to oil cooler and an Eaton model VN20F hydraulic pump with integral pressure and flow control. All power steering lines shall have wire braded lines with crimped fittings.

A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.

**STEERING WHEEL****Bidder Complies: Yes ( ) No ( )**

The steering wheel shall be 18.00" in diameter have tilting and telescoping capabilities, and a four (4)-spoke design.

**LOGO AND CUSTOMER DESIGNATION ON DASH****Bidder Complies: Yes ( ) No ( )**

The dash panel shall have an emblem containing the fire apparatus manufacturer's logo and customer name. The emblem shall have three (3) rows of text for the customer's department name. There shall be a maximum of eight (8) characters in the first row, 11 characters in the second row and 11 characters in the third row.

The first row of text shall be: Central

The second row of text shall be: Mat-Su

The third row of text shall be: Fire Dept

**HITCH RECEIVER****Bidder Complies: Yes ( ) No ( )**

A hitch receiver shall be provided at the front of the vehicle, center position under the bumper extension. The hitch shall be a receiver for a 2.00" trailer ball insert and a portable winch with a maximum weight rating of 10,000 lb.

**BUMPER****Bidder Complies: Yes ( ) No ( )**

A one (1) piece bumper manufactured from 0.25" formed steel with a 0.38" bend radius shall be provided. The bumper shall be a minimum of 10.00" high with a 1.50" top and bottom flange, and shall extend 26.00" from the face of the cab. The bumper shall be 102.00" wide with 45 degree corners and side plates. The bumper shall be metal finished and painted job color.

To provide adequate support strength, the bumper shall be mounted directly to the front of the C channel frame. The frame shall be a bolted modular extension frame constructed of 50,000 psi tensile steel.

**GRAVEL PAN****Bidder Complies: Yes ( ) No ( )**

A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and the cab face. The pan shall be properly supported from the underside to prevent flexing and vibration.

Documentation shall be provided, upon request, to show that the options selected have been engineered for fit-up and approval for this modular bumper extension. A chart shall be provided to indicate the option locations and shall include, but not be limited to, the following options: air horns, mechanical sirens, speakers, hose trays (with hose capacities), winches, lights, discharge and suction connections.

**LIFT AND TOW MOUNTS****Bidder Complies: Yes ( ) No ( )**

Mounted to the frame extension shall be lift and tow mounts. The lift and tow mounts shall be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes shall be painted the same color as the frame.

**TOW HOOKS****Bidder Complies: Yes ( ) No ( )**

No tow hooks are to be provided. This truck shall be equipped with a lift and tow package with integral tow eyes.

**HOSE TRAY****Bidder Complies: Yes ( ) No ( )**

A hose tray, constructed of aluminum, shall be placed in the center of the bumper extension.

The tray shall be 24" wide and have a capacity of 150' of 1.75" double jacket cotton-polyester hose.

Black rubber grating shall be provided at the bottom of the tray. Drain holes are also provided.

**GRAVEL PAN****Bidder Complies: Yes ( ) No ( )**

A gravel pan, constructed of bright aluminum treadplate, shall be furnished between the bumper and cab face.

The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

**HINGED CENTER SECTION****Bidder Complies: Yes ( ) No ( )**

The center section of the bumper shall be hinged at the bottom. Two (2) pawl latches shall hold the section in the closed position.

**HOSE TRAY COVER****Bidder Complies: Yes ( ) No ( )**

A bright aluminum treadplate cover shall be provided over the one (1) hose tray.

The cover shall be attached with a stainless steel hinge and located on the passenger side hose tray.

A lift and turn latch shall secure the cover in the closed position and a pneumatic stay arm shall hold the cover in the open position.

**COVER, HOSE TRAY****Bidder Complies: Yes ( ) No ( )**

A bright aluminum treadplate cover shall be provided over the one (1) hose tray.

The cover shall be "notched" allowing the hose to be preconnected to hose connection.

The cover shall be attached with a stainless steel hinge.

A high pressure gas spring shall hold the cover in the open and closed position.

A chrome grab handle shall be attached for opening the cover.

Notch in the cover for pre-connected 1.75" hose

**FRONT BUMPER NOTCH****Bidder Complies: Yes ( ) No ( )**

The front bumper shall be notched for recessing of the Q2B siren. The notch shall be designed so that the bumper is one continuous piece. The notch shall be welded in place for strength with a continuous top and bottom flange. All welds shall be metal finished for appearance. The siren shall be located driver's side of the bumper.

**HOSE TRAY (left side)****Bidder Complies: Yes ( ) No ( )**

A hose tray shall be placed in the right side of the extended bumper. The tray shall be 15.00" deep.

The tray shall have a capacity of 150' of 1.75" double jacket cotton-polyester hose.

Black rubber grating shall be provided at the bottom of the tray. Drain holes shall be provided.

**CAB****Bidder Complies: Yes ( ) No ( )**

The cab shall be designed specifically for the fire service and shall be manufactured by the chassis builder.

The cab shall be constructed of 5052-H32 aluminum skins on extruded aluminum framing. For increased structural integrity and occupant protection, the cab structure shall include, directly forward of the driver and passenger areas, a .25" firewall plate and .50" lateral support plate that shall tie the forward corner posts to the engine tunnel. The cab roof shall include a heavy one-piece aluminum extrusion with wall thickness up to .12", and shall extend from side to side, and attach to the upper forward corner posts by customized aluminum castings. The sub-structure shall include a .38" wall extrusion under the crew cab floor for support while tilting the cab. To provide quality at the source and single source customer support, the cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exception).

The cab shall be a full-tilt style to 80 degrees to accommodate engine maintenance and removal. The cab pivots shall be located 46.00" apart to provide stability while tilting the cab. The cab shall be tilted by an electric over hydraulic pump that is connected to two (2) cab lift cylinders 2.25" in diameter. The cab shall be locked down by a two (2)-point automatic locking mechanism actuated after the cab has been lowered. A three (3)-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.

The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The overall height (from the cab roof to the ground) shall be approximately 102.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed.

The cab shall have an interior width of not less than 93.50". The driver and passenger seating positions shall have a minimum 24.00" clear width at knee level.

To reduce injuries to occupants in the seated positions, proper head clearance shall be provided. The floor-to-ceiling height inside the forward cab shall be no less than 60.25". The floor-to-ceiling height inside the crew cab shall be no less than 52.95" in the center position and 58.75" in the outboard positions.

The crew cab shall measure a minimum of 57.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.

**CAB PUMP ENCLOSURE****Bidder Complies: Yes ( ) No ( )**

The rear of the cab shall be made to house the fire pump below the forward facing crew cab seats. The cab side panels shall be notched to accommodate the pump panel.

**INTERIOR CAB INSULATION****Bidder Complies: Yes ( ) No ( )**

The cab walls, ceiling and engine tunnel shall be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. The cab shall be insulated with 2.00" insulation in the rear wall, 3.00" insulation in the side walls, and 1.50" insulation in the ceiling.

**ENGINE TUNNEL****Bidder Complies: Yes ( ) No ( )**

To provide structural strength, the engine tunnel sidewalls shall be constructed of .50" aluminum plate that is welded to both the .25" firewall and .38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges shall be tapered.

The engine tunnel shall be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel shall be covered with 1.00" thick polyether foam that is reinforced with an aluminized face. Thermal rating for this insulation shall be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The insulation shall keep noise (dBA) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.

**FENDER LINERS****Bidder Complies: Yes ( ) No ( )**

Full-circular, aluminum, inner fender liners in the wheel wells shall be provided.

**PANORAMIC WINDSHIELD****Bidder Complies: Yes ( ) No ( )**

A one (1)-piece, safety glass windshield with more than 2,802 square inches of clear viewing area shall be provided. The windshield shall be full width and shall provide the occupants with a panoramic view. The windshield shall consist of three (3) layers: the outer light, the middle safety laminate, and the inner light. The .114" thick outer light layer shall provide superior chip resistance. The middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage. The inner light shall provide yet another chip resistant layer. The cab windshield shall be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern shall be applied on the outside perimeter of the windshield for a finished automotive appearance.

**SUNVISORS****Bidder Complies: Yes ( ) No ( )**

Two (2) smoked Lexan sunvisors 7.75" x 28.12" long shall be provided. The sunvisors shall be located above the windshield with one (1) mounted on each side of the cab.

**WINDSHIELD WIPERS****Bidder Complies: Yes ( ) No ( )**

Three (3) electric windshield wipers with a washer, in conformance with FMVSS and SAE requirements, shall be provided. The wiper blades shall be 21.65" long and together shall clear a minimum of 1,783 square inches of the windshield for maximum visibility in inclement weather.

The windshield washer fluid reservoir shall be located at the front of the vehicle and be accessible through the access hood for simple maintenance.

**FAST SERVICE ACCESS FRONT TILT HOOD****Bidder Complies: Yes ( ) No ( )**

A full-width access hood shall be provided for convenient access to engine coolant, steering fluid, wiper fluid, cab lift controls, headlight power modules, and ember separator. The hood shall also provide complete access to the windshield wiper motor and components. The hood shall be contoured to provide a sleek, automotive appearance. The hood shall be constructed of two (2) fiberglass panels bonded together and shall include reinforcing ribs for structural integrity. The hood shall include air cylinders to hold the hood in open and closed positions, and a heavy duty latch system that shall meet FMVSS 113 (Hood Latch System). The spring-loaded hood latch shall be located at the center of the hood with a double-action release lever located behind the upper grill. The two (2)-step release requires the lever first be pulled to the driver side until the hood releases from the first latch (primary latch) then to the passenger side to fully release the hood (secondary latch).

**CAB REAR WALL EXTERIOR COVERING****Bidder Complies: Yes ( ) No ( )**

The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

**CAB LIFT****Bidder Complies: Yes ( ) No ( )**

A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves.

The cab lift controls shall be located at the driver side front of the cab, easily accessible under the full width front access hood. The controls shall include a permanently mounted raise/lower switch. For enhanced visibility during cab tilt operations, a remote control tether with on/off switch shall be supplied on a coiled cord that shall extend from 2.00' (coiled) to 6.00' (extended).

The rear of the cab shall be locked down by a two (2)-point, automatic, hydraulic, double hook mechanism that fully engages after the cab has been lowered (self-locking). The dual 2.25" diameter hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the driver side between the chassis and cab frame when cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered.

**INTERLOCK, CAB LIFT TO PARKING BRAKE****Bidder Complies: Yes ( ) No ( )**

The cab lift safety system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism shall be disabled.

**GRILLE****Bidder Complies: Yes ( ) No ( )**

A bright finished aluminum mesh grille screen, inserted behind a formed bright finished grille surround, shall be provided on the front center of the cab, and shall serve as an air intake to the radiator.

**DOOR JAMB SCUFFPLATES****Bidder Complies: Yes ( ) No ( )**

All cab door jambs shall be furnished with a brushed stainless steel scuffplate, mounted on the striker side of the jamb.

**SCUFFPLATES, REAR CAB CORNER GUARDS****Bidder Complies: Yes ( ) No ( )**

Both rear cab corners shall be furnished with a full height brushed stainless steel corner guard scuffplate. The guard shall extend 1.00" from the corner to protect paint from damage when pulling items (such as booster hose) around the cab.

**TRIM BAND (cab face)****Bidder Complies: Yes ( ) No ( )**

A 10.00" band of 22 gauge polished stainless steel trim shall be installed across the front of the cab, from door hinge to door hinge. Polished stainless steel corner covers shall be provided at the cab turn signals. The trim band shall be centered on the head lights and applied with two-sided tape. A .625" self adhesive trim strip shall be applied around the perimeter of the trim band.

**MIRRORS****Bidder Complies: Yes ( ) No ( )**

One (1) Ramco, Model 6000-PCHR, polished aluminum mirror shall be mounted on each of the cab doors. The mirrors shall be 9.25" x 13.50", with a convex section. The mirror head shall have a highly polished aluminum finish.

The flat glass in each mirror shall be heated and adjustable, with remote controls that are convenient to the driver.

The convex section in each mirror shall be heated and adjustable, with remote controls that are convenient to the driver.

**SIDE VIEW MIRROR****Bidder Complies: Yes ( ) No ( )**

An 8.00" diameter convex mirror shall be provided over the officer's side front corner of the cab. The mirror shall provide the driver with a view of the passenger side of the vehicle.

The mirror housing, tubing, clamps and hardware shall be constructed of corrosion resistant stainless steel.

A 4.00" riser shall be provided between the mirror body and support arm on passenger side only.

### **DOORS**

**Bidder Complies: Yes ( ) No ( )**

The forward cab and crew cab doors shall be the half-height style door. To enhance entry and egress to the cab, the forward cab doors shall be a minimum of 43.59" wide x 64.71" high. The crew cab doors shall measure a minimum of 37.87" wide x 64.71" high.

The forward cab and crew cab doors shall be constructed of extruded aluminum with a nominal material thickness of .125". The exterior door skins shall be constructed from .090" aluminum.

Each forward cab and crew cab entry door shall contain a roll-down tempered glass window. The forward cab door windows shall include a 7.50" high x 10.00" wide drop area at the front to enhance visibility.

A customized, vertical, pull-down type door handle shall be provided on the exterior of each cab door. The exterior handle shall be designed specifically for the fire service to prevent accidental activation, and shall provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands. Each door shall also be provided with an interior flush, open style paddle handle that shall be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles shall provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a .38" pin and 11 gauge leaf shall be provided on all cab doors. There shall be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

The inner cab door panels shall be constructed of brushed stainless steel and be removable without requiring the disconnection of door and window mechanisms. A dark grey vacuum formed ABS panel shall house the window switches and shall mold into the upper sill of the door panel.

The cab steps at each door location shall be located below the cab doors and shall be exposed to the exterior of the cab.

### **CAB DOOR SCUFFPLATES**

**Bidder Complies: Yes ( ) No ( )**

Cab door scuffplates are not required due to stainless steel door panels on cab doors.

### **RECESSED POCKET WITH ELASTIC COVER**

**Bidder Complies: Yes ( ) No ( )**

To provide organized storage (clutter control) in the cab for miscellaneous equipment, the cab interior shall be provided with recessed storage pockets. The pockets shall be 6.50" wide x 2.12" high x 6.00" deep and shall be constructed of rugged, impact resistant, roto-molded low-density polyethylene. The pockets shall be provided with a perforated elastic material cover to secure the equipment in the pocket. The pockets shall be installed in all available mounting locations of the overhead console.

### **ELECTRIC WINDOW CONTROLS**

**Bidder Complies: Yes ( ) No ( )**

Each cab entry door shall be equipped with an electrically operated window. A window control panel shall be ergonomically molded into the armrest of the door panel within easy reach of the respective occupant. Each switch shall allow intermittent or auto down operation for ease of use. Auto down operation shall be actuated by holding the window down switch for approximately 1/2 second. The driver control panel shall contain a control switch for each cab door's window. All other door control panels shall contain a single switch to operate the window within that door.

**DUAL STEPS****Bidder Complies: Yes ( ) No ( )**

A dual step shall be provided below each cab and crew cab door. The steps shall be designed with a grip pattern punched into bright aluminum treadplate material providing support, slip resistance, and drainage. The steps shall be a bolt-on design and provide a 24.00" wide x 7.00" deep stepping surface. The step design raises the middle step higher and closer to the cab floor, resulting in a 12.00" distance from the step to cab floor in the cab and a 13.50" distance from the step to cab floor in the crew cab. Stepping distances from the ground to first step shall be 16.50" and from first step to middle step shall be 12.00".

**STEP LIGHTS****Bidder Complies: Yes ( ) No ( )**

For reduced overall maintenance costs compared to incandescent lighting, there shall be four (4) white LED, step lights provided. The lights shall be installed at each cab and crew cab door, one (1) per step, in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights shall be activated when the adjacent door is opened.

**FENDER CROWNS****Bidder Complies: Yes ( ) No ( )**

Stainless steel fender crowns shall be installed at the cab wheel openings.

**CREW CAB WINDOWS****Bidder Complies: Yes ( ) No ( )**

One (1) fixed window with tinted glass shall be provided on each side of the cab, to the rear of the front cab door. The windows shall be sized to enhance light penetration into the cab interior. The windows shall measure 20.00" wide x 20.50" high.

**WINDOW INTERIOR TRIM****Bidder Complies: Yes ( ) No ( )**

For improved aesthetics, the cab side windows shall include a vacuum formed ABS interior trim panel.

**ENCLOSURE AROUND NIGHT SCAN****Bidder Complies: Yes ( ) No ( )**

An enclosure shall be installed on three (3) sides of the Night Scan light on the cab roof. The back side shall be open to prevent water and debris from collecting in the Night Scan area. The enclosure shall be constructed out of aluminum and painted to match the cab roof. The sides of the enclosure shall be even with the top of the Night Scan light in the stored position.

**MOUNTING FLOOR****Bidder Complies: Yes ( ) No ( )**

A .188 aluminum plate shall be installed on the horizontal surface of the engine tunnel to the rear of the instrument console with work surface. This plate shall be spaced to make its surface even with that of the instrument console's work surface.

The aluminum shall cover the entire rear surface of the engine tunnel. The aluminum shall be approximately 35.00" wide x 23.00" long.

Painted to match the interior of the cab

**CAB INTERIOR****Bidder Complies: Yes ( ) No ( )**

With safety as the primary objective, the wrap-around style, high impact ABS polymer cab instrument panel shall be designed with unobstructed visibility to instrumentation. The dash layout shall provide the driver with a quick reference to gauges that allows more time to focus on the road. The center console shall be a high impact ABS polymer, and shall be easily removable for access to the defroster. The center console shall include louvers strategically located for optimal air flow and defrost capability to the windshield. The passenger side dashboard shall be constructed of painted aluminum for durability and low maintenance. For enhanced versatility, the passenger side dash shall include a flat working surface. To provide optional (service friendly) control panels, switches and storage

modules, a three (3) piece, 4mm thick polyethylene roto-molded overhead console shall also be provided. To complete the cab front interior design, painted aluminum modesty panels shall be provided under the dash on both sides of the cab. The driver side modesty panel shall provide mounting for the battery switch and diagnostic connectors, while the passenger side modesty panel provides a glove box, and ground access to the main electrical distribution panel via quick quarter turn fasteners.

To provide a deluxe automotive interior, the engine tunnel, side walls and rear wall shall be covered by a leather grain vinyl that is resistant to oil, grease, and mildew.

The inner cab door panels shall include grab handles and control panels molded into the upper section of the door panel. The door panels shall extend 36.50" down from the door window.

The headliner shall be installed in both forward and rear cab sections. The crew cab headliner shall be one (1) piece (no exception). The headliner panel shall be a composition of a corrugated high density polyethylene panel covered with a sound barrier and upholstery. For quick, easy access of electrical wiring, or to perform other maintenance needs, the headliner shall be held in place by a dual lock fastening system.

The cab structure shall include designated raceways for electrical harness routing from the front of the cab to the rear upper portion of the cab. Raceways shall be extruded in the forward door frame, floor, walls and overhead in the area where the walls meet the ceiling. The raceways located in the floor shall be covered by aluminum extrusion, while the vertical and overhead raceways shall be covered by a decorative composite panel. The raceways shall improve harness integrity by providing a continuous harness path that eliminates wire chafing and abrasion associated with exposed wiring or routing through drilled metal holes. Harnesses shall be laid in place, not pulled through holes drilled in aluminum tubing. Once laid in place, all harnesses shall be held in position by a hook and loop fastening system. The hook and loop system shall allow for bracket fastener points to not puncture harnesses. The raceways shall include removable covers, providing maintenance personnel with quick and easy access for trouble shooting, or the addition of accessories. Harnesses shall be located within the raceway behind the wire way cover.

#### **CAB INTERIOR UPHOLSTERY**

**Bidder Complies: Yes ( ) No ( )**

The cab interior upholstery shall be dark silver gray. All cab interior materials shall meet FMVSS 302 (flammability of interior materials).

#### **INTERIOR PAINT (Cab)**

**Bidder Complies: Yes ( ) No ( )**

The cab interior metal surfaces shall be painted gray, vinyl texture paint.

#### **CAB FLOOR**

**Bidder Complies: Yes ( ) No ( )**

The cab and crew cab floor areas shall be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a .25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

#### **CAB DEFROSTER**

**Bidder Complies: Yes ( ) No ( )**

To provide maximum defrost and heating performance, a 54,961BTU heater-defroster unit with 558 SCFM of air flow shall be provided inside the cab. The defroster unit shall be strategically located under the center forward portion of the roto-molded instrument panel. For easy access, a removable roto-molded cover shall be installed over the defroster unit. The defroster shall include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one (1) piece windshield. The defroster ventilation shall be built into the design of the cab dash instrument panel and shall be easily removable for maintenance. The defroster shall be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at zero (0) degrees Fahrenheit for

ten (10) hours, and a two (2) ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system shall meet or exceed SAE J382 minimum defrosting system performance requirements.

**CAB/CREW CAB HEATER**

**Bidder Complies: Yes ( ) No ( )**

Two (2) 36,702 BTU auxiliary heaters with 276 SCFM each unit of air flow shall be provided inside the crew cab, one (1) in each outboard rear-facing seat riser. The heaters shall include high performance dual scroll blowers one (1) for each unit. Outlets for the heaters shall be located below each rear-facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum shall be incorporated in the cab structure that shall transfer heat to the forward cab seating positions.

The heater-defroster and crew cab heaters shall be controlled by a single integral electronic control panel. The heater control panel shall allow the driver to control heat flow to the front and rear simultaneously. The control panel shall include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel shall include highly visible, progressive LED indicators for both fan speed and temperature. For increased convenience, an optional dual control for the passenger position shall also be available.

**WINDOW DEFROST FANS**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) 12 volt DC fans mounted on the ceiling of the crew cab, located install on the headliner between the seats. Install in the round recess in the housing to position the fans farther forward than normal.

**GRAB HANDLE**

**Bidder Complies: Yes ( ) No ( )**

A black rubber covered grab handle shall be mounted on the door post of the driver side and passenger cab door to assist in entering the cab. The grab handle shall be securely mounted to the post area between the door and windshield.

A long rubber grab handle shall be mounted on the dash board in front of the officer.

**ENGINE COMPARTMENT LIGHT**

**Bidder Complies: Yes ( ) No ( )**

An engine compartment light shall be installed under the engine hood, of which the switch is an integral part. Light shall have a .125" diameter weep hole in its lens to prevent moisture retention.

**ACCESS TO ENGINE DIPSTICKS**

**Bidder Complies: Yes ( ) No ( )**

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface. The door shall be 17.75" wide x 12.75" high and be flush with the wall of the engine tunnel.

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional tube shall be provided for filling the engine oil.

The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door.

**MAP BOX**

**Bidder Complies: Yes ( ) No ( )**

A map box with nine (9) bins, open from the top, shall be installed in cab on top of the aluminum work surface, 6" forward of the rear of the engine tunnel. The outer dimensions of the map box shall be 36.00" wide x 22.00" deep x 10.00" high. The box shall be separated into two (2) sections.

The rear section shall consist of three (3) equally sized bins, approximately 12.00" x 10.00" x 10.00".

The forward section shall be 23.38" wide x 12.00" deep x 10.00" high. This section shall be separated into six (6) bins with dividers placed at the following intervals from passenger side to driver side, 1.75", 1.75", 3.75", 3.75", 5.75", and 5.75" all dimensions clear opening of the slot. Each of the forward bin dividers shall have a 30 degree slant beginning approximately at 2.00" from center of the map box

along the top edge of the divider to approximately 4.00" from the base of the forward edge of the divider.

The map box shall be constructed of .125" aluminum and shall be designed using a slot and tab construction.

### **CAB SAFETY SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

The cab shall be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and shall include the following:

- A supplemental restraint system (SRS) sensor shall be installed on a structural cab member behind the instrument panel. The SRS sensor shall perform real time diagnostics of all critical subsystems and shall record sensory inputs immediately before and during a side roll or frontal impact event.
- A slave SRS sensor shall be installed in the ceiling of the cab to provide capacity for eight (8) crew cab seating positions.
- A fault-indicating light shall be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.
- A driver side front air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the three (3)-point seat belt.
- A passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the three (3)-point seat belt.
- Air curtains shall be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall.
- Suspension seats shall be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event.
- Seat belts shall be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event.

### **FRONTAL IMPACT PROTECTION**

**Bidder Complies: Yes ( ) No ( )**

The SRS system shall provide protection during a frontal or oblique impact event. The system shall activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis shall have been subjected, via third party test facility, to a crash impact during frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor shall activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected. (No exception).

The SRS system shall deploy the following components in the event of a frontal or oblique impact event:

- Driver side front air bag.
- Passenger side knee bolster air bag.
- Air curtains mounted in the outboard bolster of outboard seat backs.
- Suspension seats shall be retracted to the lowest travel position.
- Seat belts shall be pre-tensioned to firmly hold the occupant in place.

**SIDE ROLL PROTECTION****Bidder Complies: Yes ( ) No ( )**

The SRS system shall provide protection during a fast or slow 90-degree roll to the side, in which the vehicle comes to rest on its side. The system shall analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

The SRS system shall deploy the following components in the event of a side roll:

- Air curtains mounted in the outboard bolster of outboard seat backs.
- Suspension seats shall be retracted to the lowest travel position.
- Seat belts shall be pre-tensioned to firmly hold the occupant in place.

**SEATING CAPACITY****Bidder Complies: Yes ( ) No ( )**

The seating capacity in the cab shall be six (6).

**DRIVER SEAT****Bidder Complies: Yes ( ) No ( )**

A seat shall be provided in the cab for the driver. The seat design shall be a cam action type with air suspension. For increased convenience, the seat shall include electric controls to adjust the rake (15 degrees), height (1.12" travel) and horizontal (7.75" travel) position. Electric controls shall be located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat shall have a reclining back, adjustable from 20 degrees back to 45 degrees forward. Providing for maximum comfort, the seat back shall be a high back style with manual lumbar adjustment lever, for lower back support, and shall include minimum 7.50" deep side bolster pads for maximum support. The lumbar adjustment lever shall be easily located at the lower outboard position of the seat cushion. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control).

The seat shall include the following features incorporated into the side roll protection system.

Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

A suspension seat safety system shall be included. When activated in the event of a side roll, this system shall pretension the seat belt, then retract the seat to its lowest travel position.

The seat shall be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

**OFFICER SEAT****Bidder Complies: Yes ( ) No ( )**

A seat shall be provided in the cab for the passenger. The seat shall be a cam action type with air suspension. For increased convenience, the seat shall include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control shall be a towel-bar style located below the forward part of the seat cushion. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not belted.

The seat back shall be an SCBA back style with 7.50 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall include the following features incorporated into the side roll protection system.

Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

A suspension seat safety system shall be included. When activated this system shall pretension the seat belt and then retract the seat to its lowest travel position.

The seat shall be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

**REAR FACING DRIVER SIDE OUTBOARD SEAT**

**Bidder Complies: Yes ( ) No ( )**

There shall be One (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle. It shall activate an alarm indicating a seat is occupied but not buckled.

The seat back shall be an SCBA back style with 7.50 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall include the following features incorporated into the side roll protection system.

Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

A seat safety system shall be included. When activated this system shall pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat shall be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

**REAR FACING PASSENGER SIDE OUTBOARD SEAT**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled.

The seat back shall be an SCBA back style with 7.50 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall include the following features incorporated into the side roll protection system.

Side air curtain shall be mounted integral to the outboard bolster of the seat back. The air curtain shall be covered by a decorative panel when in the stowed position.

A seat safety system shall be included. When activated this system shall pretension the seat belt and firmly hold the occupant in the event of a side roll.

The seat shall be furnished with a three (3)-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

**EMS COMPARTMENT**

**Bidder Complies: Yes ( ) No ( )**

An EMS compartment, 21.00" wide x 44.00" high x 14.00" deep with one (1) Gortite roll up door, non-locking, with white finish shall be provided in the crew cab.

The compartment shall be constructed of smooth aluminum, and painted to match the cab interior.

**COMPARTMENT LIGHT**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) On Scene Solutions LED strip light installed on the left side of the compartment opening. The lights shall be controlled by an automatic door switch.

**FORWARD FACING CENTER SEATS**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) forward facing seats provided at the center position in the crew cab. For optimal comfort, the seats shall be provided with 17.00" deep dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seats shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled.

The seat backs shall be an SCBA back style with 7.50 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seats shall include the following feature incorporated into the side roll protection system.

A seat safety system shall be included. When activated, this system shall pretension the seat belts around the occupants to firmly hold them in place in the event of a side roll.

The seats shall be furnished with three (3)-point, shoulder type seat belts. To provide quick, easy use for occupants wearing bunker gear, the seat belts shall have a minimum 130.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belts shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position.

**EMS COMPARTMENT**

**Bidder Complies: Yes ( ) No ( )**

An EMS compartment, 21.00" wide x 44.00" high x 14.00" deep with one (1) Gortite roll up door, non-locking, with white finish shall be provided in the crew cab.

The compartment shall be constructed of smooth aluminum, and painted to match the cab interior.

**COMPARTMENT LIGHT**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) On Scene Solutions LED strip light installed on the left side of the compartment opening. The lights shall be controlled by an automatic door switch.

**This storage compartment shall be compliant per NFPA standard for automotive fire apparatus.**

**SHELVING****Bidder Complies: Yes ( ) No ( )**

There shall be four (4) shelves provided in the EMS compartment. Each shelf shall be constructed of .090" aluminum with a 1.25" up-turned lip. Shelving shall be infinitely adjustable by means of a threaded tightener sliding in a track.

The location shall be two in each EMS compartment.

**SEAT UPHOLSTERY****Bidder Complies: Yes ( ) No ( )**

All seat upholstery shall be gray woven with black Imperial 1200 material.

**AIR BOTTLE HOLDERS****Bidder Complies: Yes ( ) No ( )**

All SCBA type seats in the cab shall have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket shall include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp shall constrain the SCBA bottle in the seat and shall exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, shall not be acceptable.

There shall be a quantity of five (5) SCBA brackets.

**SHOULDER HARNESS HEIGHT ADJUSTMENT****Bidder Complies: Yes ( ) No ( )**

All seating positions furnished with three (3)-point shoulder type seat belts shall include a height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter.

A total of six (6) seating positions shall have the adjustable shoulder harness.

**SEAT BELTS****Bidder Complies: Yes ( ) No ( )**

All seating positions in the cab and crew cab shall have red seat belts.

**SEAT BELT MONITORING ON COMMAND ZONE COLOR DISPLAY** Bidder Complies: Yes ( ) No ( )

A seat belt monitoring screen shall be provided on the Command Zone color display. The system shall be capable of monitoring up to ten (10) seating positions in the cab with green and red seating icons illuminated as follows:

Seat Occupied	Buckled	Green Icon
Seat Occupied	Unbuckled	Red Icon
Seat Not Occupied	Buckled	Red Icon
Seat Not Occupied	Unbuckled	No Icon

The seat belt monitoring screen shall become active on the Command Zone color display when:

- The park brake is released:
- and there is any occupant seated but not buckled or any belt buckled without an occupant:
- And there are no other Do Not Move Truck conditions present. As soon as all Do Not Move Truck conditions are cleared, the seat belt monitoring screen shall be activated.

The seat belt monitoring screen shall be manually selected anytime the Command Zone color display is powered.

The seat belt monitoring screen shall be accompanied by an audible alarm that will activate when a red seat icon condition exists and the parking brake is released.

There shall be one (1) audible alarm override switch provided, one (1) on the driver's side cab instrument panel which shall deactivate the audible alarm when an occupant un-weights the seat when the parking brake is released. And alarm shall chirp at one minute intervals as long as the condition is present. Activation of the parking brake shall reset the override switches.

NFPA 1901, 2009 edition, section 14.1.3.10 requires a seat belt warning device.

The seat belt warning device is intended to assist the driver or officer in determining whether all occupants are seated and belted before the vehicle is driven. The alarm shall be deactivated manually by the switch whenever a new fault develops. Without this device the driver must manually determine that all occupants are seated and belted before the apparatus is placed in motion.

#### **HELMET HOLDER**

**Bidder Complies: Yes ( ) No ( )**

There shall be six (6) Zico UHH-1 helmet holder bracket(s) provided in the cab. The brackets shall provide quick access and secure storage of the helmet(s). The bracket location(s) shall be determined at time of final inspection.

#### **CAB DOME LIGHTS**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) Weldon LED dome lights, Model 8080/8081-8000-13 installed in the cab. The lights shall be mounted above the inside shoulder of the driver and officer.

- The forward, white, light shall be controlled by the door switch and the lens switch.
- The rear, red, light shall be controlled by the lens switch only.

In addition, there shall be two (2) adjustable map lights with an integral switch recessed into the cab ceiling. One (1) light shall be located above the driver's seat and one (1) light shall be located above the officer's seat.

#### **CREW CAB DOME LIGHTS**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) Weldon, Model 8080-8000-13 LED dome lights with black bezels installed in the crew cab and located one (1) each side, controlled by the following:

- The forward, clear light shall be controlled by the door switch and the lens switch.
- The rear, red light shall be controlled by the lens switch only.

A courtesy light at each door opening, controlled by automatic door switches

#### **HAND HELD SPOTLIGHT**

**Bidder Complies: Yes ( ) No ( )**

There shall be four (5) Pelican Products, Model 9410 LED, 12v DC rechargeable lights mounted to be determined.

The color shall be yellow.

Each charger shall be hard wired to the 12 VDC system.

#### **CAB INSTRUMENTATION**

**Bidder Complies: Yes ( ) No ( )**

The cab instrument panel shall consist of gauges, an LCD display, telltale indicator lights, alarms, control switches, and a diagnostic panel. The function of instrument panel controls and switches shall be identified by a label adjacent to each item. Actuation of the headlight switch shall illuminate the labels in low light conditions. Telltale indicator lamps shall not be illuminated unless necessary. The cab instruments and controls shall be conveniently located within the forward cab section directly forward of the driver. Gauge and switch panels shall be designed to be removable for ease of service and low cost of ownership.

#### **GAUGES**

**Bidder Complies: Yes ( ) No ( )**

The gauge panel shall include the following ten (10) ivory gauges with chrome bezels to monitor vehicle performance:

Voltmeter gauge (Volts)

Low volts (11.8 VDC)

Amber indicator on gauge assembly with alarm

High volts (15 VDC)

Amber indicator on gauge assembly with alarm

Very low volts (11.3 VDC)

Amber indicator on gauge assembly with alarm

Very high volts (16 VDC)

Amber indicator on gauge assembly with alarm

Tachometer (RPM)

Speedometer (Primary (outside) MPH, Secondary (inside) Km/H)

Fuel level gauge (Empty - Full in fractions)

Low fuel (1/8 full)

Amber indicator on gauge assembly with alarm

Very low fuel (1/32) fuel

Amber indicator on gauge assembly with alarm

Engine oil pressure gauge (PSI)

Low oil pressure to activate engine warning lights and alarms

Red indicator on gauge assembly with alarm

Front air pressure gauge (PSI)

Low air pressure to activate warning lights and alarm

Red indicator on gauge assembly with alarm

Rear air pressure gauge (PSI)

Low air pressure to activate warning lights and alarm

Red indicator on gauge assembly with alarm

Transmission oil temperature gauge (Fahrenheit)

High transmission oil temperature activates warning lights and alarm

Amber indicator on gauge assembly with alarm

Engine coolant temperature gauge (Fahrenheit)

High engine temperature activates an engine warning light and alarm

Red indicator on gauge assembly with alarm

Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions)

Low fluid (1/8 full)

Amber indicator on gauge assembly with alarm

All gauges and gauge indicators shall perform prove out at initial power-up to ensure proper performance.

**INDICATOR LAMPS**

**Bidder Complies: Yes ( ) No ( )**

To promote safety, the following telltale indicator lamps shall be integral to the gauge assembly and are located above and below the center gauges. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols.

The following amber telltale lamps shall be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)
- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- SRS (supplemental restraint system) fault (where applicable)
- DEF (low diesel exhaust fluid level)

The following red telltale lamps shall be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps shall be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp shall be provided:

- High beam

## **ALARMS**

**Bidder Complies: Yes ( ) No ( )**

Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning message is present.

Audible pulsing tone caution alarm: A pulsing audible tone alarm (chime/chirp) shall be provided whenever a caution message is present without a warning message being present.

Alarm silence: Any active audible alarm shall be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms shall intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp shall act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition shall enable the steady or pulsing tones respectively.

## **INDICATOR LAMP AND ALARM PROVE-OUT**

**Bidder Complies: Yes ( ) No ( )**

Telltale indicators and alarms shall perform prove-out at initial power-up to ensure proper performance.

## **CONTROL SWITCHES**

**Bidder Complies: Yes ( ) No ( )**

For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver.

Emergency master switch: A molded plastic push button switch with integral indicator lamp shall be provided. Pressing the switch shall activate emergency response lights and siren control. A green lamp on the switch provides indication that the emergency master mode is active. Pressing the switch again disables the emergency master mode.

Headlight / Parking light switch: A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking lights and the headlights. The second switch position shall activate the parking lights. The third switch position shall activate the headlights.

Panel backlighting intensity control switch: A three (3)-position momentary rocker switch shall be provided. The first switch position decreases the panel backlighting intensity to a minimum level as the switch is held. The second switch position is the default position that does not affect the backlighting intensity. The third switch position increases the panel backlighting intensity to a maximum level as the switch is held.

The following standard controls shall be integral to the gauge assembly and are located below the right hand gauges. All switches have backlit labels for low light applications.

High idle engagement switch: A two (2)-position momentary rocker switch with integral indicator lamp shall be provided. The first switch position is the default switch position. The second switch position shall activate and deactivate the high idle function when pressed and released. The "Ok To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch shall indicate when the high idle function is engaged.

"Ok to Engage High Idle" indicator lamp: A green indicator light shall be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

The following standard controls shall be provided adjacent to the cab gauge assembly within easy reach of the driver. All switches shall have backlit labels for low light applications.

Ignition switch: A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall deactivate vehicle ignition. The second switch position shall activate vehicle ignition. The third momentary position shall disable the Command Zone audible alarm if held for three (3) to five (5) seconds. A green indicator lamp shall be activated with vehicle ignition.

Engine start switch: A two (2)-position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

4-way hazard switch: A two (2)-position maintained rocker switch shall be provided. The first switch position shall deactivate the 4-way hazard switch function. The second switch position shall activate the 4-way hazard function. The switch actuator shall be red and includes the international 4-way hazard symbol.

Heater, defroster, and optional air conditioning control panel: A control panel with membrane switches shall be provided to control heater/defroster temperature and heater, defroster, and air conditioning fan speeds. A green LED status bar shall indicate the relative temperature and fan speed settings.

Turn signal arm: A self-canceling turn signal with high beam headlight and windshield wiper/washer controls shall be provided. The windshield wiper control shall have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve shall be provided.

Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel.

### **CUSTOM SWITCH PANELS**

**Bidder Complies: Yes ( ) No ( )**

The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There shall be positions for up to four (4) switch panels in the overhead console on the driver's side, up to four (4) switch panels in the engine tunnel console facing the driver, up to four (4) switch panels in the overhead console on the officer's side and up to two (2) switch panels in the engine tunnel console facing the officer. All switches shall have backlit labels for low light applications.

### **DIAGNOSTIC PANEL**

**Bidder Complies: Yes ( ) No ( )**

A diagnostic panel shall be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic panel shall include the following:

- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- SRS diagnostic port (where applicable)
- Command Zone USB diagnostic port
- Engine diagnostic switch (blink codes flashed on check engine telltale indicator)
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

### **CAB LCD DISPLAY**

**Bidder Complies: Yes ( ) No ( )**

A digital four (4)-row by 20-character dot matrix display shall be integral to the gauge panel. The display shall be capable of showing simple graphical images as well as text. The display shall be split

into three (3) sections. Each section shall have a dedicated function. The upper left section shall display the outside ambient temperature.

The upper right section shall display, along with other configuration specific information:

- Odometer
- Trip mileage
- PTO hours
- Fuel consumption
- Engine hours

The bottom section shall display INFO, CAUTION, and WARNING messages. Text messages shall automatically activate to describe the cause of an audible caution or warning alarm. The LCD shall be capable of displaying multiple text messages should more than one caution or warning condition exist.

**AIR RESTRICTION INDICATOR**

**Bidder Complies: Yes ( ) No ( )**

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm shall be provided.

- Officer Speedometer, A Class I digital display speedometer shall be provided on the officer side overhead position.

**"DO NOT MOVE APPARATUS" INDICATOR**

**Bidder Complies: Yes ( ) No ( )**

A Whelen Model 5SR00FRR flashing red LED indicator light, located in the driving compartment, shall be illuminated automatically per the current NFPA requirements. The light shall be labeled "Do Not Move Apparatus If Light Is On".

The same circuit that activates the Do Not Move Apparatus indicator shall activate a steady tone alarm when the parking brake is released.

**DO NOT MOVE TRUCK MESSAGES**

**Bidder Complies: Yes ( ) No ( )**

Messages shall be displayed on the gauge panel LCD located forward of the steering wheel directly in front of the driver whenever the Do Not Move Truck light is active. The messages shall designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages shall be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed

Lt Tower Not Stowed (Light Tower Not Stowed)

Hatch Door Open

Fold Tank Not Stowed (Fold-A-Tank Not Stowed)

Aerial Not Stowed (Aerial Device Not Stowed)

Stabilizer Not Stowed

Steps Not Stowed

Handrail Not Stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved shall be displayed as a caution message after the parking brake is disengaged.

### **SWITCH PANELS**

**Bidder Complies: Yes ( ) No ( )**

The emergency light switch panel shall have a master switch for ease of use plus individual switches for selective control. Each switch panel shall contain eight (8) membrane-type switches each rated for one million (1,000,000) cycles. Panels containing less than eight (8) switch assignments shall include non-functioning black appliques. Documentation shall be provided by the manufacturer indicating the rated cycle life of the switches. The switch panel(s) shall be located in the overhead position above the windshield on the driver side overhead to allow for easy access.

The switches shall be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch shall be illuminated white whenever backlighting is activated and illuminated red whenever the switch is active. For ease of use, a two (2)-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch shall be placed in the center of the switch. The label shall allow light to pass through the letters for ease of use in low light conditions.

### **WIPER CONTROL**

**Bidder Complies: Yes ( ) No ( )**

For simple operation and easy reach, the windshield wiper control shall be an integral part of the directional light lever located on the steering column. The wiper control shall include high and low wiper speed settings, a one (1)-speed intermittent wiper control and windshield washer switch. The control shall have a "return to park" provision, which allows the wipers to return to the stored position when the wipers are not in use.

### **SPARE CIRCUIT**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires shall have the following features:

The positive wire shall be connected from a switch located on the cab switch panel, through a relay.

The negative wire shall be connected to ground.

Wires shall be protected to 15 amps at 12 volts DC.

Power and ground shall terminate officer's side dash.

Termination shall be with 15 amp, power point plug with rubber cover.

Wires shall be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

### **SPARE CIRCUIT**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires shall have the following features:

The positive wire shall be connected directly to the battery power.

The negative wire shall be connected to ground.

Wires shall be protected to 20 amps at 12 volts DC.

Power and ground shall terminate below the crewcab seat box.

Termination shall be with six (6) position terminal strip.

Wires shall be sized to 125% of the protection.

This circuit(s) may be load managed when the parking brake is set.

**PRESSURE GAUGE**

**Bidder Complies: Yes ( ) No ( )**

A Class 1 brand, digital pressure gauge shall be provided for front turret. The gauge shall be located in the cab visible to the driver and properly labeled.

**SPECIAL PUC GAUGE LOCATION**

**Bidder Complies: Yes ( ) No ( )**

The pump pressure gauge and water/foam level gauges shall be located Instrument panel #8.

**RADIO WITH CD PLAYER**

**Bidder Complies: Yes ( ) No ( )**

There shall be a Panasonic AM/FM/Weatherband stereo radio with compact disc player and MP3 jack installed.

The compact disc stereo radio shall be mounted within reach of the officer.

The quantity and location of the speakers shall be one (1) pair of 5.25" speakers located in the cab and one (1) pair of 5.25" speakers located in the crew cab.

The type and location of the antenna shall be a roof-mounted rubber antenna located in an open space, on the cab roof.

**INFORMATION CENTER**

**Bidder Complies: Yes ( ) No ( )**

An information center employing a 7.00" diagonal color LCD display shall be encased in an ABS plastic housing.

The information center shall have the following specifications:

- Operate in temperatures from -40 to 185 degrees Fahrenheit
- An Optical Gel shall be placed between the LCD and protective lens
- Five weather resistant user interface switches
- Black enclosure with gray decal
- Sunlight Readable
- Linux operating system
- Minimum of 400nits rated display
- Display can be changed to an available foreign language

**OPERATION**

**Bidder Complies: Yes ( ) No ( )**

The information center shall be designed for easy operation for everyday use.

The page button shall cycle from one screen to the next screen in a rotating fashion.

A video button shall allow a NTSC signal into the information center to be displayed on the LCD. By pressing any button while viewing a video feed shall return the information center to the vehicle information screens.

A menu button shall provide access to maintenance, setup and diagnostic screens.

All other button labels shall be specific to the information being viewed.

### **GENERAL SCREEN DESIGN**

**Bidder Complies: Yes ( ) No ( )**

Where possible, background colors shall be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background shall be used. If a caution or warning situation arises the following shall occur:

- An amber background/text color shall indicate a caution condition.
- A red background/text color shall indicate a warning condition.

Every screen shall include the following:

- Exterior Ambient Temperature
- Time (12 or 24 hour mode)
- Text Alert Center:
  - The information center shall utilize an "Alert Center" to display text messages for audible alarm tones. The text messages shall be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages shall cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" shall change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color shall be shown for all alert center messages.
- Button Labels: A label for each button shall exist. The label shall indicate the function for each active button for each screen. Buttons that are not utilized on specific screens shall have a button label with no text.

### **PAGE SCREENS**

**Bidder Complies: Yes ( ) No ( )**

The Information center shall include the following screens:

Load Manager Screen: A list of items to be load managed shall be provided. The list shall provide:

- Description of the load
- Individual load shed priority: The lower the priority number the earlier the device shall be shed should a low voltage condition occur.
- Load Status: The screen shall indicate if a load has been shed (disabled) or not shed.

"At a Glance" color features are utilized on this screen

Do Not Move Truck: The Do Not Move Truck screen shall indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices shall be indicated:

- Driver Side Cab Door
- Passenger's Side Cab Door
- Driver Side Crew Cab Door

- Passenger's Side Crew Cab Door
- Driver Side Body Doors
- Passenger's Side Body Doors
- Rear Body Door(s)
- Ladder Rack (if applicable)
- Deck Gun (if applicable)
- Light Tower (if applicable)
- Hatch Door (if applicable)
- Stabilizers (if applicable)
- Steps (if applicable)
- Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved, shall cause an "Alert Center" message if the parking brake is disengaged.

Chassis Information: The following information shall be shown:

- Engine RPM
- Fuel Level
- Battery Voltage
- Engine Coolant Temperature
- Engine Oil Pressure

"At a Glance" color features are utilized on this screen

Active Alarms List: This screen shall show a list of all active text messages. The list items text shall match the text messages shown in the "Alert Center". The date and time the message occurred is displayed with each message in the list.

## **MENU SCREENS**

**Bidder Complies: Yes ( ) No ( )**

The following screens shall be available through the Menu button:

View System Information: A detailed list of vehicle information:

- Battery Volts
- Pump Hours
- Transmission Oil Temperature
- Pump Engaged
- Engine Coolant Level
- Engine Oil Level
  - Oil level shall only be shown when the engine is not running
- Power Steering Level

Set daytime and nighttime Display Brightness:

- Brightness: Increase and decrease
- Default setting button

#### Configure Video Mode:

- Set Video Contrast
- Set Video Color
- Set Video Tint

#### Set Startup Screen:

- Choose the screen that shall be active at vehicle power-up

#### Set Date & Time:

- 12 or 24 hour format
- Set time
- Set date

#### View Active Alarms:

- Shows a list of all active alarms
  - Date and time of the occurrence is shown with each alarm
- Silence alarms
  - All alarms are silenced

#### System Diagnostics:

- Module type and ID number
- Module version
- Module diagnostics information:
  - Input or output number
  - Circuit number connected to that input or output
  - Circuit name (item connected to the circuit)
  - Status of the input or output
  - Power and Constant Current module diagnostic information

Button functions and button labels may change with each screen.

### **VEHICLE DATA RECORDER**

**Bidder Complies: Yes ( ) No ( )**

A vehicle data recorder (VDR) shall be provided. The VDR shall be capable of reading and storing vehicle information. The VDR shall be capable of operating in a voltage range from 8VDC to 16VDC. The VDR shall not interfere with, suspend, or delay any communications that may exist on the CAN data link during the power up, initialization, runtime, or power down sequence. The VDR shall continue operation upon termination of power or at voltages below 8VDC for a minimum of 10ms.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A CD provided with the apparatus shall include the programming to

download the information from the VDR. A USB cable can be used to connect the VDR to a laptop to retrieve required information.

The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs:

Vehicle Speed - MPH

Acceleration - MPH/sec

Deceleration - MPH/sec

Engine Speed - RPM

Engine Throttle Position - % of Full Throttle

ABS Event - On/Off

Seat Occupied Status - Yes/No by Position (7-12 Seating Capacity)

Seat Belt Buckled Status - Yes/No by Position (7-12 Seating Capacity)

Master Optical Warning Device Switch - On/Off

Time - 24 Hour Time

Date - Year/Month/Day

#### **INTERCOM SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

There shall be a David Clark, Series 9900, wireless radio base station for up to four (4) wireless users. A four (4) bay, 12VDC battery charger shall be located two forward and two rear facing crew cab seats. The officer shall have wired single radio capability. Four (4) wired crew seating positions, at four (4) forward facing seats shall be intercom only with radio listen.

The following components shall be supplied with this system:

- One (1) U9922-G38 Wireless gateway for up to four (4) simultaneous users
- One (1) A99-04CRG1 12VDC Battery charger
- One (1) 40688G-97 Battery retention straps kit
- One (1) U3815 Radio interface headset station (Officer)
- One (1) U3800 Master station (2 Crew)
- One (1) C3820 Power cord
- Two (2) U3802 Remote headset stations (Outboard Crew)
- All necessary station interconnect cables

#### **RADIO INTERFACE CABLE**

**Bidder Complies: Yes ( ) No ( )**

The apparatus manufacturer shall supply and install one (1) radio interface cable before delivery of the vehicle. The radio equipment to be used by the customer shall be Motorola High Power, model number Motorola APX6500.

#### **UNDER THE HELMET WIRELESS SLOTTED HEADSET**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) under helmet, marine grade headset(s) with one (1) ear cup slotted (No NRR) and wireless radio push-to-talk belt station(s) provided driver. There shall be one (1) user replaceable, rechargeable, Li-polymer battery included with each belt station.

Each David Clark, Model H9941, headset shall feature:

- 6' Coiled cord with military grade belt station connector
- M-87 type dynamic noise cancelling microphone

- Hinged/flex microphone boom rotates 280 degrees for left or right dress
- Volume control
- One ear cup slotted (No NRR)

Each David Clark, Model U9910-BSW, belt station shall feature:

- Marine grade, water-tight, impact resistant enclosure with rubberized skin
- Hands free, full duplex, voice activation
- Voice prompts to ensure wireless link status
- Water-tight battery compartment

#### **UNDER THE HELMET HEADSET**

**Bidder Complies: Yes ( ) No ( )**

There shall be five (5) under the helmet headset(s) provided officer and four in crewcab.

Each David Clark, Model H3342, headset shall feature:

- 5' Coiled cord
- M1/DC microphone
- Chrome microphone boom rotates 200 degrees for left or right dress
- Microphone on/off button
- Foam ear-seals

#### **HEADSET HANGERS**

**Bidder Complies: Yes ( ) No ( )**

There shall be six (6) headset hanger(s) installed four in crew, driver and officer. The hanger(s) shall meet NFPA 1901, Section 14.1.11 requirement for equipment mounting.

#### **TWO WAY RADIO INSTALLATION**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) customer supplied two way radio(s) sent to the apparatus manufacturers preferred radio installer to be installed match job #25608. No antenna mount or whip shall be included in this option. Specific radio shipping requirements shall be followed.

#### **RADIO ANTENNA MOUNT**

**Bidder Complies: Yes ( ) No ( )**

There shall be three (3) standard 1.125", 18 thread antenna-mounting base(s) installed install on the cab roof, spaced 36" apart on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the radio box. A weatherproof cap shall be installed on the mount.

#### **VIDEO SYSTEM, SAFETY VISION WITH DISPLAY**

**Bidder Complies: Yes ( ) No ( )**

A Safety Vision video system with Model 620 color rear view and 622 color side view video cameras shall be provided. All cameras feature a built in microphone, activated with the camera.

Cameras shall be on the driver side of the cab activated with the left turn signal and passenger side of the cab activated with the right turn signal and at the rear of the vehicle, as close to center as possible, activated when the vehicle is put into reverse.

Images shall be displayed in the cab on the vehicle display provided. Audio from the active camera shall be via an amplified speaker with volume control located behind the driver seat.

#### **VEHICLE CAMERA GUARD**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) aluminum treadplate guard(s) fastened over the vehicle camera(s) located just above the rear camera.

#### **ELECTRICAL POWER CONTROL SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

The primary power distribution shall be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers shall be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers shall be located

strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers shall be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays shall be easily accessible.

Distribution centers located throughout the vehicle shall contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, shall be utilized to protect electrical circuits. All circuit protection devices shall be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting). When required, automotive type fuses shall be utilized to protect electronic equipment. Control relays and solenoid shall have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

### **SOLID-STATE CONTROL SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

A solid-state electronics based control system shall be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network shall consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system shall comply with SAE J1939-11 recommended practices.

The control system shall operate as a master-slave system whereas the main control module instructs all other system components. The system shall contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system shall utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules shall include the following attributes:

Green LED indicator light for module power

Red LED indicator light for network communication stability status

Control system self test at activation and continually throughout vehicle operation

No moving parts due to transistor logic

Software logic control for NFPA mandated safety interlocks and indicators

Integrated electrical system load management without additional components

Integrated electrical load sequencing system without additional components

Customized control software to the vehicle's configuration

Factory and field reprogrammable to accommodate changes to the vehicle's operating parameters

Complete operating and troubleshooting manuals

USB connection to the main control module for advanced troubleshooting

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules shall meet the following specifications:

Module circuit board shall meet SAE J771 specifications

Operating temperature from -40C to +70C

Storage temperature from -40C to +70C

Vibration to 50g

IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)

Operating voltage from eight (8) volts to 16 volts DC

The main controller shall activate status indicators and audible alarms designed to provide warning of problems before they become critical.

**CIRCUIT PROTECTION AND CONTROL DIAGRAM**

**Bidder Complies: Yes ( ) No ( )**

Copies of all job-specific, computer network input and output (I/O) connections shall be provided with each chassis. The sheets shall indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

**ON-BOARD ADVANCED/VISUAL ELECTRICAL SYSTEM DIAGNOSTICS**

**Bidder Complies:**

**Yes ( ) No ( )**

The on-board information center shall include the following diagnostic information:

Text description of active warning or caution alarms

Simplified warning indicators

Amber caution light with intermittent alarm

Red warning light with steady tone alarm

All control system modules, with the exception of the main control module, shall contain on-board visual diagnostic LEDs that assist in troubleshooting. The LEDs shall be enclosed within the sealed, transparent module housing near the face of the module. One LED for each input or output shall be provided and shall illuminate whenever the respective input or output is active. Color-coded labels within the modules shall encompass the LEDs for ease of identification. The LED indicator lights shall provide point of use information for reduced troubleshooting time without the need for an additional computer.

**ADVANCED DIAGNOSTICS**

**Bidder Complies: Yes ( ) No ( )**

An advanced, Windows-based, diagnostic software program shall be provided for this control system. The software shall provide troubleshooting tools to service technicians equipped with an IBM compatible computer.

The service and maintenance software shall be easy to understand and use and have the ability to view system input/output (I/O) information.

**INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

**VOLTAGE MONITOR SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

**DEDICATED RADIO EQUIPMENT CONNECTION POINTS**

**Bidder Complies: Yes ( ) No ( )**

There shall be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment.

The studs shall consist of the following:

12-volt 40-amp battery switched power

12-volt 60-amp ignition switched power

12-volt 60-amp direct battery power

There shall also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

### **ENHANCED SOFTWARE**

**Bidder Complies: Yes ( ) No ( )**

The solid-state control system shall include the following software enhancements:

All perimeter lights and scene lights (where applicable) shall be deactivated when the parking brake is released.

Cab and crew cab dome lights shall remain on for ten (10) seconds for improved visibility after the doors close. The dome lights shall dim after ten (10) seconds or immediately if the vehicle is put into gear.

Cab and crew cab perimeter lights shall remain on for ten (10) seconds for improved visibility after the doors close. The dome lights shall dim after ten (10) seconds or immediately if the vehicle is put into gear.

### **EMI/RFI PROTECTION**

**Bidder Complies: Yes ( ) No ( )**

To prevent erroneous signals from crosstalk contamination and interference, the electrical system shall meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system shall be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus shall have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system shall meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, shall provide EMC testing reports from testing conducted on an entire apparatus and shall certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility shall be controlled by applying appropriate circuit designs and shielding. The electrical system shall be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

### **ELECTRICAL HARNESSING INSTALLATION**

**Bidder Complies: Yes ( ) No ( )**

To ensure rugged dependability, all 12-volt wiring harnesses installed by the apparatus manufacturer shall conform to the following specifications:

SAE J1128 - Low tension primary cable

SAE J1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring

SAE J163 - Low tension wiring and cable terminals and splice clips

SAE J2202 - Heavy duty wiring systems for on-highway trucks

NFPA 1901 - Standard for automotive fire apparatus

FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses

SAE J1939 - Serial communications protocol

SAE J2030 - Heavy-duty electrical connector performance standard

SAE J2223 - Connections for on board vehicle electrical wiring harnesses

NEC - National Electrical Code

SAE J561 - Electrical terminals - Eyelet and spade type

SAE J928 - Electrical terminals - Pin and receptacle type A

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes shall not be allowed.

Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wiring shall be color, function and number coded. Wire colors shall be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. All wiring installed between the cab and into doors shall be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

1. All wire ends not placed into connectors shall be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap shall not be allowed.
2. All holes made in the roof shall be caulked with silicon (no exception). Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
3. Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.
4. For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
5. Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
6. Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
7. All electrical terminals in exposed areas shall have DOW 1890 protective Coating applied completely over the metal portion of the terminal.
8. Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
9. Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
10. Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
11. All braided wire harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
12. All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

**BATTERY CABLE INSTALLATION****Bidder Complies: Yes ( ) No ( )**

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

SAE J1127 - Battery Cable

SAE J561 - Electrical terminals, eyelets and spade type

SAE J562 - Nonmetallic loom

SAE J836A - Automotive metallurgical joining

SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring

NFPA 1901 - Standard for automotive fire apparatus

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

1. All battery cables and battery harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
2. Splices shall not be allowed on battery cables or battery cable harnesses.
3. For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be red in color or wrapped in red loom the entire length of the cable. All negative battery cables shall be black in color.
4. For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
5. For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.

**ELECTRICAL COMPONENT INSTALLATION****Bidder Complies: Yes ( ) No ( )**

All lighting used on the apparatus shall be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding shall not be allowed.

An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests shall be recorded and provided to the purchaser at time of delivery.

**BATTERY SYSTEM****Bidder Complies: Yes ( ) No ( )**

Four (4) 12 volt, Exide Model 31S950X3W batteries that include the following features shall be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

**BATTERY SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

A single starting system shall be provided.

An ignition switch and starter button shall be located on the instrument panel.

**MASTER BATTERY SWITCH**

**Bidder Complies: Yes ( ) No ( )**

A master battery switch, to activate the battery system, shall be provided inside the cab within easy reach of the driver.

An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.

**BATTERY COMPARTMENTS**

**Bidder Complies: Yes ( ) No ( )**

The batteries shall be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments shall be constructed of 3/16" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The compartments shall include formed fit heavy-duty roto-molded polyethylene battery tray inserts with drains on each side of the frame rails. The batteries shall be mounted inside of the roto-molded trays.

**JUMPER STUDS**

**Bidder Complies: Yes ( ) No ( )**

One (1) set of battery jumper studs with plastic color-coded covers shall be installed on the battery box on the driver's side. This shall allow enough room for easy jumper cable access.

**BATTERY CHARGER/ AIR COMPRESSOR**

**Bidder Complies: Yes ( ) No ( )**

A Kussmaul Pump Plus 1200, model 091-9-1200 single output battery charger/air compressor system shall be provided. A display bar graph indicating the state of charge shall be included.

The automatic charger shall maintain one (1) set of batteries with a maximum output current of 40 amps.

The 12-volt air compressor shall be installed to maintain the air system pressure when the vehicle is not in use.

The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.

Battery charger shall be located in the cab behind the driver seat.

The battery charger indicator shall be located behind the driver's door on the outside of the cab.

**KUSSMAUL AUTO EJECT FOR SHORELINE**

**Bidder Complies: Yes ( ) No ( )**

One (1) shoreline receptacle shall be provided to operate the dedicated 120-volt circuits on the truck without the use of the generator.

The shoreline receptacle (s) shall be provided with a NEMA 5-20, 120 volt, 20 amp, straight blade Kussmaul Super auto eject plug with a gray weatherproof cover. The cover is spring loaded to close, preventing water from entering when the shoreline is not connected.

The unit is completely sealed to prevent road dirt contamination.

A solenoid wired to the vehicle's starter is energized when the engine is started. This instantaneously drives the plug from the receptacle.

An internal switch arrangement shall be provided to disconnect the load prior to ejection to eliminate arcing of the connector contacts.

The shoreline shall be connected to engine heater, battery charger, and receptacles in P1.

A mating connector body shall also be supplied with the loose equipment.

The shoreline receptacle shall be located on the driver side of cab, above wheel.

**SUB FEED CIRCUIT BREAKER BOX (shoreline)**

**Bidder Complies: Yes ( ) No ( )**

A Cutler Hammer sub feed box shall be supplied to protect the on board circuits when an auxiliary power source is used.

The box shall be installed in the near breaker box.

The sub feed box shall distribute power to specific circuits in the vehicle.

A directory for each breaker shall be provided adjacent to the circuit breaker panel.

Identification of circuits shall be done in a durable manner that provides years of service.

**ELECTRIC POWER FOR WINCH**

**Bidder Complies: Yes ( ) No ( )**

Electric power provisions shall be furnished for the portable winch from the chassis battery system.

The receiver plug shall be located front and one each side.

A total quantity of three (3) receptacles shall be provided.

**ALTERNATOR**

**Bidder Complies: Yes ( ) No ( )**

A C.E. Niehoff, model C620, alternator shall be provided. It shall have a rated output current of 340 amp as measured by SAE method J56. Also, it shall have a custom three (3)-set point voltage regulator, manufactured by C. E. Niehoff. The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

**INTERLOCK, RADIO**

**Bidder Complies: Yes ( ) No ( )**

The Am/Fm radio shall be interlocked to silence whenever the Emergency Master is activated.

**ELECTRONIC LOAD MANAGER**

**Bidder Complies: Yes ( ) No ( )**

An electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components shall not be allowed.

The system shall include the following features:

- System voltage monitoring

- A shed load shall remain inactive for a minimum of five minutes to prevent the load from cycling on and off.

- Sixteen available electronic load shedding levels

- Priority levels can be set for individual outputs.

- High Idle to activate before any electric loads are shed and deactivate with the service brake.

- If enabled:

- "Load Man Hi-Idle On" shall display on the information center.

- Hi-Idle shall not activate until 30 seconds after engine start up.

- Individual switch "on" indicator to flash when the particular load has been shed

The information center indicates system voltage.

The information center, where applicable, includes a "Load Manager" screen indicating the following:

Load managed items list, with priority levels and item condition.

Individual load managed item condition:

ON = not shed

SHED = shed

### **SEQUENCER**

**Bidder Complies: Yes ( ) No ( )**

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components shall not be allowed.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half-second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Sequencing of the following items shall also occur, in conjunction with the ignition switch, at half-second intervals:

Cab Heater and Air Conditioning

Crew Cab Heater (if applicable)

Crew Cab Air Conditioning (if applicable)

Exhaust Fans (if applicable)

Third Evaporator (if applicable)

### **EXTERIOR LIGHTING**

**Bidder Complies: Yes ( ) No ( )**

Exterior lighting shall comply with Federal Department of Transportation, Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at time of proposal.

Front headlights shall be Brightheadlight kit number Bi-XP4656-Kit, rectangular lights mounted in the front trim housing. Headlights shall consist of two (2) lights mounted in the front trim on each side of the cab grill. The outside light on each side shall contain a HID low and halogen high beam. The inside light on each side shall contain a high beam light only.

The following LED lighting package shall provide long life lights for a lower cost of ownership:

- One (1) Whelen 600 series LED combination directional/marker light shall be located in the outside corners of the headlamp trim housing on each side.
- Three (3) LED identification lamps shall be installed in the center of the cab on the trim above the windshield.
- Four (4) LED clearance lamp shall be installed, one (1) each side, facing forward and one (1) each side, facing the side on the trim above the windshield.

The three (3) identification lights located at the rear shall be installed per the following:

Truck-Lite, Model 26250, LED

As close as practical to the vertical centerline

Centers spaced not less than six (6) inches or more than twelve (12) inches apart.

Red in color

All at the same height

The four (4) clearance lights located at the rear shall be installed per the following:

Truck-Lite, Model 26250, LED

To indicate the overall width of the vehicle

One (1) each side of the vertical centerline

All at the same height

As near the top as practical

To be visible from the rear and the side

One (1) each side, facing the side

One (1) each side, facing the rear

Per FMVSS 108 and CMVSS 108 requirements

#### **REAR FMVSS LIGHTING**

**Bidder Complies: Yes ( ) No ( )**

The rear stop/tail and directional LED lighting shall consist of the following:

- Two (2) Whelen, Model M6BTT red LED stop/tail lights.
- Two (2) Whelen, Model M6T amber LED arrow turn lights.

Each light shall be installed separately at the rear with chrome trim and colored lenses.

Four (4) red reflectors shall be provided.

#### **BACKUP LIGHTS**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) Whelen, Model: M6BUW LED backup lights with chrome flanges provided.

#### **LICENSE PLATE BRACKET**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) license plate bracket mounted on the driver's side above the warning lights.

A white LED light shall illuminate the license plate. A polished stainless steel light shield shall be provided over the light that shall direct illumination downward, preventing white light to the rear.

#### **BACK-UP ALARM**

**Bidder Complies: Yes ( ) No ( )**

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The device shall sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

#### **LIGHT, INTERMEDIATE**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) pair, of Truck-Lite, Model: 60115Y, amber, LED, turn signal, marker lights furnished, one (1) each side, horizontally in the rear fender panel.

A stainless steel trim shall be included with this installation.

**CAB PERIMETER SCENE LIGHTS****Bidder Complies: Yes ( ) No ( )**

There shall be four (4) Amdor LumaBar H2O white LED strip lights provided, one (1) for each cab door and crew cab door.

- Two (2) Amdor LumaBar H2O, Model AY-9500-020, 20.00" LED strip lights, one (1) for each cab door.
- Two (2) Amdor LumaBar H2O, Model AY-9500-012, 12.00" LED strip lights, one (1) for each crew cab door.

**PERIMETER SCENE LIGHTS, BODY****Bidder Complies: Yes ( ) No ( )**

There shall be a total of four (4) Amdor Luma Bar, H2O Model AY-9500-020 20" LED weatherproof strip lights with brackets provided on the apparatus. The lights shall be mounted in the following locations: two (2) lights shall be provided under the rear step area, and one (1) light shall be provided each side under the pump panel running boards.

The lights shall be activated by parking brake control and switch in cab.

These lights shall meet NFPA requirements for perimeter scene lights.

**ADDITIONAL PERIMETER LIGHT(S)****Bidder Complies: Yes ( ) No ( )**

An On Scene Solution, model Night Stick 27.00" long LED weatherproof light shall be provided in addition to the normal body perimeter lights.

There shall be a total of six (6) lights provided. The light(s) shall be installed recess in the bumpers, sides and rear.

**STEP LIGHTS****Bidder Complies: Yes ( ) No ( )**

There shall be two (2) white LED step lights shall be provided at the rear to illuminate the tailboard/step area.

In order to ensure exceptional illumination, each light shall provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

These step lights shall be actuated with the perimeter scene lights.

All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901.

**LIGHT HOUSING****Bidder Complies: Yes ( ) No ( )**

There shall be four (4) housing(s) installed upper side sheets to allow for a partial recess of a light in an area with an obstruction behind the bulkhead. The housing material shall match the body material and each shall be painted to match the apparatus.

**12 VOLT LIGHTING****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) Whelen Pioneer PCP2, 12 volt LED combination spotlight and floodlight(s) provided on the front visor, centered.

The light shall be controlled by the following:

A switch at the driver's side switch panel

These light(s) may be load managed when the parking brake is set.

**12 VOLT LIGHTING****Bidder Complies: Yes ( ) No ( )**

There shall be three (3) Whelen Model PCP2, 12 volt LED combination spotlight and floodlight(s) installed in semi-recessed housing(s) Model PBA203 located three passenger's side, one side of light tower enclosure, two side of body one front and one rear.

The light(s) selected above shall be controlled by the following:

A switch at the driver's side switch panel

These light(s) may be load managed when the parking brake is set

**12 VOLT LIGHTING**

**Bidder Complies: Yes ( ) No ( )**

There shall be three (3) Whelen Model PCP2, 12 volt LED combination spotlight and floodlight(s) installed in semi-recessed housing(s) Model PBA203 located three driver's side, one side of light tower enclosure, two side of body one front and one rear.

The light(s) selected above shall be controlled by the following:

A switch at the driver's side switch panel

These light(s) may be load managed when the parking brake is set

**12 VOLT LIGHTING**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) Whelen Model PCP2, 12 volt LED combination spotlight and floodlight(s) installed in semi-recessed housing(s) Model PBA203 located rear of body above the hard suction storage, driver's side.

The light(s) selected above shall be controlled by the following:

A switch at the driver's side switch panel

These light(s) may be load managed when the parking brake is set

**WATER TANK**

**Bidder Complies: Yes ( ) No ( )**

Booster tank shall have a capacity of 1000 gallons and be constructed of UV stabilized ultra high impact polypropylene plastic by a manufacturer with a minimum of 20 years experience building tanks, is ISO 9001:2000 certified in all its manufacturing facilities, and has over 50,000 tanks in service.

The booster tank shall be a form-fitting design that serves to keep the tank height as low as possible. The tank shall be no wider than 39.00" at the base to allow for greater compartment depth and no wider than 53.00" at the top.

Tank joints and seams shall be nitrogen welded inside and out.

Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments.

Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions shall interlock and shall be welded to the tank bottom and sides.

Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.

Tank top shall be sufficiently supported to keep it rigid during fast filling conditions.

Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that is 8.00" long x 8.00" wide x 6.00" deep shall be provided at the bottom of the water tank.

Sump shall include a drain plug and the tank outlet.

Tank shall be installed in a fabricated cradle assembly constructed of structural steel.

Sufficient crossmembers shall be provided to properly support bottom of tank. Crossmembers shall be constructed of steel flat bar or rectangular tubing.

Tank shall "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on.

Stops or other provision shall be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system shall be approved by the tank manufacturer.

Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 8.00" wide x 14.00" long.

Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, shall be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

One (1) sleeve shall be provided in the water tank for plumbing to the rear.

#### **DIRECT TANK FILL AUTOMATIC**

**Bidder Complies: Yes ( ) No ( )**

There shall be a 2.50" gated external tank fill installed and integrated with the large diameter rear suction system. The tank fill shall use the suction pipe and connection as the water supply for the tank fill.

Piping, for the fill, shall be routed through the front wall of the tank and include a flow deflector to break up the stream of water entering the water tank.

An electrically controlled 2.50" full flow ball valve with 2.50" piping shall be located in the front plumbing area. The electric valve shall be wired to the water level indicator. When the water level falls to a point of approximately 1/2 the valve shall automatically open. When the water level returns to the full mark the valve shall close. The valve controls shall be mounted on the pump panel.

#### **BODY HEIGHT**

**Bidder Complies: Yes ( ) No ( )**

The height of the body shall be 92.00" from the bottom of the body to the top of the body.

#### **HOSE BED**

**Bidder Complies: Yes ( ) No ( )**

The hose body shall be fabricated of .125"-5052 aluminum with a 38,000 psi tensile strength.

Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall be a minimum of .50" x 4.50" with spacing between slats for hose ventilation.

Hose bed shall accommodate from driver's side - 200' of 2.5", 500' of 3", 1000' of 5", 200' of 1.75" hose.

#### **HOSEBED DIVIDER**

**Bidder Complies: Yes ( ) No ( )**

Three (3) adjustable hosebed dividers shall be furnished for separating hose.

Each divider shall be constructed of a .25" brushed aluminum sheet. Flat surfaces shall be sanded for uniform appearance, or constructed of brushed aluminum.

Divider shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.

Divider shall be held in place by tightening bolts, at each end.

Acorn nuts shall be installed on all bolts in the hose bed which have exposed threads.

**BACKBOARD STORAGE COMPARTMENT**

**Bidder Complies: Yes ( ) No ( )**

A storage compartment for backboard(s), shall be located on the passenger's side of the hose bed. The backboard(s) shall be stored horizontally in a stainless steel trough with a Velcro strap to contain the backboard. The trough shall be sized to hold two back boards mounted horizontally, with a divider between, board size 6' long x 18" wide x 2" high. The opening size shall be approximately. 6' 2", x 18.5", 2.5" high with a ramp at rear so straps do not catch.

**CUTOUT, HANDHOLD**

**Bidder Complies: Yes ( ) No ( )**

A cutout with radiused corners shall be provided at the rear of the three (3) hose bed divider(s).

**LIGHTS,BELOW HOSE BED COVER**

**Bidder Complies: Yes ( ) No ( )**

Installed below the aluminum hosebed cover, shall be one (1) pair of ROM LED lights.

One (1) strip light from each pair shall be installed on the edge of the reinforcing channel for each door, (for protection of the light).

Opening the hose bed cover shall automatically turn the lighting on.

**HOSE BED COVER**

**Bidder Complies: Yes ( ) No ( )**

A two (2) section hose bed cover, constructed of .125" bright aluminum treadplate shall be furnished. The cover shall be hinged with full length stainless steel piano hinge. The sides shall be slanted down.

The cover shall be reinforced so that it can support the weight of a man walking on the cover.

If access to water tank fill tower is blocked by the hose bed cover, then a hinged door shall be provided in it so that tank may be filled without raising cover doors.

Chrome grab handles and four (4) gas filled cylinders shall be provided to assist in opening and closing the cover. A handrail is to be provided at the rear, in the center of the support, to assist in opening the cover.

**HOSEBED END FLAP**

**Bidder Complies: Yes ( ) No ( )**

A pair of gray vinyl flaps shall be installed on the rear, one for each of the aluminum treadplate hose bed covers.

Each vinyl flap shall have three (3) nylon tie down straps, with quick release thumb spring buckles. Fasnep model 207668 stainless steel buckles shall be attached to the flaps. These vinyl end skirts shall be installed directly to the hosebed frame.

Rubber coated hooks and stainless steel footman loops shall secure the end skirts/bed covers to the main body.

**RUNNING BOARDS**

**Bidder Complies: Yes ( ) No ( )**

A running board shall be provided on each side of the front body to allow access to the backboard/crosslay storage area. The running boards shall be designed with a grip pattern punched into .125" bright aluminum treadplate material providing support, slip resistance, and drainage.

The runningboard shall have a flip out section design that allows easier access to the full width equipment area above. The flip out section shall be tied to the "do not move truck indicator" with a sensor when it is flipped out. There shall be a latch provided that secures the flip out section when not in use.

**HANDRAILS**

**Bidder Complies: Yes ( ) No ( )**

The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface.

Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces.

Drain holes shall be provided in the bottom of all vertically mounted handrails.

- Two (2) handrails shall be provided, one above each running board.

#### **TAILBOARD**

**Bidder Complies: Yes ( ) No ( )**

The tailboard shall be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly.

The tailboard area shall be 12.00" deep and full width of the body.

The exterior side shall be flanged down and in for increased rigidity of tailboard structure.

#### **REAR WALL, BODY MATERIAL, PUC**

**Bidder Complies: Yes ( ) No ( )**

The rear wall shall be smooth and the same material as the body.

The rear wall body material shall be painted. Unpainted aluminum overlays shall be provided to allow for chevron application and to provide continuously smooth rear wall panels.

The outboard edges of the rear wall shall be trimmed in polished stainless steel.

#### **TOW BAR**

**Bidder Complies: Yes ( ) No ( )**

A tow bar shall be installed under the tailboard at center of truck.

Tow bar shall be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly shall be constructed of .38" structural angle. When force is applied to the bar, it shall be transmitted to the frame rail.

Tow bar assembly shall be designed and positioned to allow up to a 30 degree upward angled pull of 17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle.

Tow bar design shall have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

#### **HITCH RECEIVER**

**Bidder Complies: Yes ( ) No ( )**

A hitch receiver shall be installed at each side of the apparatus, to the rear of the wheels, under the rear platform.

The side hitch receivers shall be constructed of heavy steel tubing and reinforced to the truck framework. The side hitch receivers shall be capable of retaining a 9,000 lb portable winch.

Slide-in portion shall be held in place by one (1) safety pin with clip.

The outboard surfaces of the tailboard to the rear of the body compartmentation (approximately one third on each side) shall be raised to allow for rear plumbing to exit at a higher level than normal.

#### **COMPARTMENTATION**

**Bidder Complies: Yes ( ) No ( )**

Body and compartments shall be formed sheet metal fabricated of .125", 5052-H32 aluminum. Body shall be of welded construction to ensure greatest longevity with no visible welds in compartment interior.

Welded construction shall consist of 1.00" x .38" engineered plug weld holes that control the size, location, and the amount of weld required. The bodies shall be assembled and welded from engineered prints that call out the size, location, and type of weld required. These prints shall be available upon request.

Side compartments shall be an integral assembly with the rear fenders.

Circular fender liners shall be provided. For prevention of paint chips and ease of suspension maintenance the fender liners shall be formed from brush finished 304L stainless steel, be unpainted, and removable for suspension maintenance. (no exception).

Compartment flooring shall be of the sweep out design with the floor 1.00" higher than the compartment door lip.

Drip protection shall be provided above the doors by means of aluminum extrusion, or formed bright aluminum treadplate.

The top of the compartment shall be covered with bright aluminum treadplate rolled over the edges on the front, and rear. These covers shall have the corners welded.

Top side compartment covers shall not be used to form the compartment ceilings, but rather they shall be a separate component.

All screws and bolts, which are not Grade 8, shall be stainless steel and where they protrude into a compartment shall have acorn nuts on the ends to prevent injury.

### **UNDERBODY SUPPORT SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load shall be provided.

The backbone of the body support system shall begin with the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads. The support system shall include lateral frame rail extensions that are formed from .375" 80k high strength steel and bolted to the chassis frame rails with .625" diameter Grade 8 bolts. The vertical and horizontal members of the frame rail extensions are to be reinforced with welded gussets and extend to the outside edge of the body. The lateral frame extensions shall be electro-coated for superior corrosion resistance.

The floating substructure shall be separated from the lateral frame extensions with neoprene elastomer isolators. These isolators shall reduce the natural flex stress of the chassis from being transmitted to the body, and absorb road shock and vibration.

The isolators shall have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The neoprene isolators shall be installed in a modified V three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body. A minimum of 12 - 2.55" diameter isolators shall be provided, four (4) under each front compartment and two (2) under each rear side compartment. A minimum of four (4) 3.50" diameter isolators shall be provided under the rear compartment.

A design with body compartments simply hanging/sitting on the chassis in an unsupported (cantilever) fashion shall not be acceptable.

### **AGGRESSIVE WALKING SURFACE**

**Bidder Complies: Yes ( ) No ( )**

All exterior surfaces designated as stepping, standing, and walking areas shall comply with the required average slip resistance of the current NFPA standards. Documentation of the material meeting the standard shall be provided at time of delivery.

### **LOUVERS**

**Bidder Complies: Yes ( ) No ( )**

All body compartments shall have a minimum of one (1) set of automotive style, dust resistant louvers pressed into a wall. The louvers shall incorporate a one (1)-way rubber valve that provides airflow out of the compartment and prevents water and dirt from gaining access to the compartment. Each louver shall be 3.00" wide x 8.50" tall. Compartments over the wheel shall not have louvers.

**TESTING OF BODY DESIGN****Bidder Complies: Yes ( ) No ( )**

Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis and strain gauging have been performed with special attention given to fatigue life and structural integrity of the body and substructure.

The body shall be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure shall include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.
- Driving the vehicle on at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

Evidence of the actual testing techniques shall be made available upon request.

FEA shall have been performed on all substructure components.

**COMPARTMENTATION, DRIVER'S SIDE****Bidder Complies: Yes ( ) No ( )**

A full height, roll-up door compartment ahead of the rear wheels shall be provided. The pump operator's panel shall be located in this compartment. The interior dimensions of this compartment shall be 62.00" wide x 54.50" high x 25.88" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 59.00" wide x 54.50" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A roll-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 60.00" wide x 23.00" high x 25.88" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The clear door opening of this compartment shall be 57.00" wide x 23.00" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 52.00" wide x 54.50" high x 25.88" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 49.00" wide x 54.50" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

All compartments shall include a drip pan below the roll of the door.

**COMPARTMENTATION, PASSENGER'S SIDE****Bidder Complies: Yes ( ) No ( )**

A full height, jump off compartment with a roll-up door ahead of the rear wheels shall be provided, as convenient large storage compartment for often used items for the crew. The interior dimensions of this compartment shall be 62.00" wide x 54.50" high x 25.88" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 59.00" wide x 54.50 high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A roll-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 60.00" wide x 23.00" high x 25.88" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The clear door opening of this compartment shall be 57.00" wide x 23.00" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 52.00" wide x 54.50" high x 25.88" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 49.00" wide x 54.50" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

All compartments shall include a drip pan below the roll of the door.

**ROLL-UP DOOR, SIDE COMPARTMENTS****Bidder Complies: Yes ( ) No ( )**

There shall be six (6) compartment doors installed on the side compartments. The doors shall be double faced aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by A&A Manufacturing (Gortite).

Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from plus 300 to minus 40 degrees Fahrenheit. Hardened plastic shall not be acceptable.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.

Doors shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surfaces shall be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly shall not exceed 3.00" in diameter. A garage style roll door shall not be acceptable.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.

**COMPARTMENTATION, REAR**

**Bidder Complies: Yes ( ) No ( )**

A roll-up door compartment above the rear tailboard shall be provided.

Interior dimensions of this compartment shall be approximately 36.75" wide x 42.38" high x 25.88" deep in the lower 33.75" of height and 15.75" deep in the remaining upper portion. Depth of the compartment shall be calculated with the compartment door closed.

A removable access panel shall be furnished on the back wall of the compartment.

Rear compartment shall be open to the rear side compartments. The transverse opening shall be a minimum of approximately 22.00" wide x 28.75" high.

Clear door opening of this compartment shall be 33.50" wide x 33.75" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

**ROLL-UP DOOR, REAR COMPARTMENT**

**Bidder Complies: Yes ( ) No ( )**

The rear compartment shall have a roll-up door. The door shall be double faced aluminum construction, an anodized satin finish and manufactured by A&A Manufacturing (Gortite).

Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from plus 300 to minus 40 degrees Fahrenheit. Hardened plastic shall not be acceptable.

A polished stainless steel lift bar to be provided for each roll-up door. Lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.

Door shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surface shall be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartments, the spring roller assembly shall not exceed 3.00" in diameter. A garage style roll door shall not be acceptable.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of open compartment door warning lights.

**PULL STRAP, DOORS**

**Bidder Complies: Yes ( ) No ( )**

The eight (8) compartment doors, located all side compartments and speedlays, shall be provided with pull straps.

**COMPARTMENT LIGHTING****Bidder Complies: Yes ( ) No ( )**

There shall be nine (9) compartments with Amdor LED compartment light strips. The strips shall be centered vertically along each side of the door framing. The compartments with these strip lights shall be located all body compartments and the roll up speedlay compartments.

Any remaining compartments shall include 6.00" diameter Truck-Lite, Model: 79384, lights in each enclosed compartment. Each light shall have a number 1076 one filament, two wire bulb.

Opening the compartment door shall automatically turn the compartment lighting on.

**HATCH COMPARTMENTS****Bidder Complies: Yes ( ) No ( )**

Hatch compartments with two (2) lift-up, top opening hatch doors shall be provided above the driver and passenger side body compartments. Each hatch compartment shall extend the full length of the side body compartmentation x 21.00" wide x 22.00" maximum depth. The compartments shall extend the full length of the side body compartmentation except for a 20.00" recessed step area at the rear of the compartment on the access ladder side.

Sides of the compartments shall be constructed of the same material as the body and painted job color on the outside panels.

Top of the compartments shall be constructed of bright aluminum treadplate.

Two (2) lift-up, bright aluminum treadplate doors shall be provided on the top of each hatch compartment. Each door shall have a lever handle with a slam style latch to hold the doors in the closed position.

These double pan doors shall have lipped edges with a rubber seal for weather resistance.

Doors shall be hinged on the outboard side and shall be held open with pneumatic stay arms.

The compartments shall have a 3/4" drain that extends to below the body.

Ribbed rubber matting shall be provided on the compartment floor to stop wet equipment from sitting in water pools.

**HATCH COMPARTMENT LIGHTING****Bidder Complies: Yes ( ) No ( )**

There shall be Amdor LumaBar, Model AY-9200-0\*\* LED strip lights mounted full length on the interior, hinged side of each compartment.

Opening the hatch compartment door shall automatically turn this hatch compartment lighting on.

One (1) divider shall be furnished in the cargo area forward of the hosebed.

The dividers shall be located in cargo area.

**MOUNTING TRACKS****Bidder Complies: Yes ( ) No ( )**

There shall be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks shall not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

The tracks shall be provided in each compartment except for the one that contains the pump operator's panel.

**ADJUSTABLE SHELVES****Bidder Complies: Yes ( ) No ( )**

There shall be six (6) shelves, with a capacity of 500 pounds provided. The shelf construction shall consist of .188" thick brushed aluminum with 2.00" sides. Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves shall be held in place by .12" thick stamped plated brackets and bolts.

The location shall be One in R1 to be 4" short of the door. Three in D1 two high and one low. One in D3 upper behind the bulkhead. One in P1 as high as possible.

**PULL-OUT TRAY**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) slide-out tray, with 2" sides, and a capacity of 500 pounds provided. Capacity rating shall be in the extended position.

The tray shall be constructed of .19" aluminum.

Slides (a minimum of two per tray) shall be an undermount-roller bearing type rated at 500lbs per pair with a factor of safety of 2.

To ensure years of dependable service the slides shall be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides shall require no more than a 50 pound force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file shall have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance shall be provided upon request.

Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for it shall be located at the front of the tray for ease of use with a gloved hand.

The tray shall be painted to match the compartment interior.

Tray location shall be rear portion of P3.

A heavy-duty assembly shall support the body under the compartment floor. It shall be attached to the chassis frame for load transfer and to reduce stress on body.

**PULL-OUT TRAY**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) slide-out tray, without sides, and a capacity of 500 pounds provided. Capacity rating shall be in the extended position.

The tray shall be constructed of .19" aluminum. The tray shall be painted to match the compartment interior.

Slides (a minimum of two per tray) shall be an undermount-roller bearing type rated at 500lbs per pair with a factor of safety of 2.

To ensure years of dependable service the slides shall be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides shall require no more than a 50 pound force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file shall have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance shall be provided upon request.

Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for it shall be located at the front of the tray for ease of use with a gloved hand.

Tray location shall be installed in R1.

A heavy-duty assembly shall support the body under the compartment floor. It shall be attached to the chassis frame for load transfer and to reduce stress on body.

**PULL-OUT ADJUSTABLE HEIGHT TRAY****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) slide-out tray with 2.00" sides and a capacity of 500 pounds provided. Capacity rating shall be in the extended position.

Slides shall be equipped with ball bearings for ease of operation and years of dependable service.

The tray shall be painted to match the compartment interior.

Tray location shall be In P1 low.

Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for it shall be located at the front of the tray for ease of use with a gloved hand.

Each tray shall be adjustable up and down within the compartment.

**SLIDE-OUT/TILT-DOWN TRAY****Bidder Complies: Yes ( ) No ( )**

There shall be four (4) slide-out trays provided.

The capacity rating (in the extended position) shall be 215 pounds minimum.

Approximately two-thirds of the tray shall slide-out from its stored position and shall tilt 30 degrees down from horizontal. The vertical position within the compartment shall be adjustable.

Construction shall consist of .188" thick aluminum for the tray bottom and end, and special aluminum extrusions for the tray sides, front and tracks. The tray shall be painted to match the compartment interior.

The tray corners shall be welded for strength and rigidity.

The tray shall be equipped with ball bearing rollers for smooth operation.

Two spring loaded locks shall be provided at the front of the tray, one on each end.

Rubber padded stops shall be provided for both the in out tray position.

The tray(s) shall be located in Two in rear portion of P3. One in P2. One in P1 centered between slide-out tray and shelf.

**SWING OUT TOOLBOARD****Bidder Complies: Yes ( ) No ( )**

A swing out aluminum toolboard shall be provided.

It shall be a minimum of .188" thick with .20" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame shall be welded to the edge of the pegboard.

The board shall be mounted on a pivoting device at the back of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load shall be 400 pounds.

The board shall have positive lock in the stowed and extended position.

The board shall be mounted stationary within the compartment.

There shall be One (1) toolboard(s) provided, shall be painted to match compartment interior, and installed over the wheel well compartment, driver's side, D2.

**SLIDE-OUT TOOLBOARD****Bidder Complies: Yes ( ) No ( )**

A slide-out aluminum toolboard shall be provided. It shall have a painted finish to match the compartment interior.

It shall be a minimum of 0.188" thick with 0.203" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame shall be welded to the edge of the pegboard.

The board shall be mounted on an undermount-roller bearing type slide rated at 250 lb with a factor of safety of 2.

To ensure years of dependable service the slides shall be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides shall require no more than a 50 pound force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file shall have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance shall be provided upon request.

The board shall have positive lock in the stowed and extended position.

The toolboard shall be mounted on adjustable tracks side to side within the compartment.

There shall be Three (3) provided.

The toolboard(s) shall be located to be determined.

#### **DRAWER ASSEMBLY**

**Bidder Complies: Yes ( ) No ( )**

A slideout drawer assembly shall be installed front driver's side compartment.

The clear dimensions starting at the top of the cabinet with the first drawer shall be 8.25" high x 21.00" deep. The clear dimensions of the second drawer shall be 6.25" high x 21.00" deep. The clear dimensions of the third drawer shall be 4.25" high x 21.00" deep. The clear dimensions of the fourth drawer shall be 4.25" high x 21.00" deep. Each drawer shall be the same width and not exceed 48.00".

The drawers shall have a capacity of 250 pounds.

The drawers shall be mounted in a cabinet housing constructed of light gray powder coated aluminum with anodized aluminum frames. The housing shall be 24.00" deep, and completely enclose the drawer.

A full-length aluminum extruded rail shall be provided at the top edge of each drawer. This rail shall act as the latching mechanism as well as the handle for each drawer.

There shall be a total of one (1) provided.

#### **TOOL BOX**

**Bidder Complies: Yes ( ) No ( )**

A tool box shall be furnished.

The outside size shall be 22.00" long x 10.00" wide x 10.00" deep.

The tool box shall be black in color.

Construction shall be of .50" polypropylene plastic with joints and seams nitrogen welded. A cut out carrying handle shall be provided on each end.

There shall be two (2) provided. It shall be located ship loose.

#### **AIR BAG/CRIB STORAGE ,215#**

**Bidder Complies: Yes ( ) No ( )**

A storage area shall be installed under the front body. Construction shall be of bright aluminum treadplate with an aluminum slide out drawer and a "D" ring handle. The outer panel of the drawer shall be covered in brush finished stainless steel.

The compartment shall have the capacity to hold up to 215 pounds of equipment and be located on the passenger's side under the front body. The exterior dimensions of the compartment shall be approximately 8.00" high x 26.00" wide x 21.00" deep.

**AIR BAG/CRIB STORAGE ,215#**

**Bidder Complies: Yes ( ) No ( )**

A storage area shall be installed under the front body. Construction shall be of bright aluminum treadplate with an aluminum slide out drawer and a D handle. The outer panel of the drawer shall be covered in brush finished stainless steel.

The compartment shall have the capacity to hold up to 215 pounds of equipment and be located on the driver's side under the front body. The exterior dimensions of the compartment shall be approximately 8.00" high x 34.50" wide x 18.00" deep. The interior dimensions of the compartment shall be approximately 6.00" high x 29.50" wide x 15.50" deep.

**BODY MOUNTING**

**Bidder Complies: Yes ( ) No ( )**

There shall be blue Loctite® applied to all body mounting bolts

**COMPARTMENT GRATING**

**Bidder Complies: Yes ( ) No ( )**

Vinyl grating shall be provided in 21 compartments. The locations are, all compartment floors, tray, shelves and the cargo floor to the rear of the water tank fill dome.

The vinyl grating shall be .50" thick and be cross bonded by .25" diameter ribbed sections spaced for aeration.

**MOUNTING, STOKES BASKET**

**Bidder Complies: Yes ( ) No ( )**

Mounting shall be provided for a stokes basket above the crosslays. A sheet metal enclosure shall be fabricated. A strap shall be provided to prevent the stokes from sliding against the outer doors. The enclosure shall be removable for plumbing access.

The size of the stokes basket shall be 7" deep x 24.50" wide x 86.00"long.

**PARTITION, VERTICAL COMPARTMENT**

**Bidder Complies: Yes ( ) No ( )**

Four (4) partitions shall be bolted in Install 2 in D3, lower rear portion, 6" away from the center mounted slide-out tool board, up to the bottom of the ladder storage. Install 2 in P3, full height, locate 20" back from the front wall and ahead of the hopper tube. Each partition shall be the full vertical height of the compartment.

**PEGBOARD**

**Bidder Complies: Yes ( ) No ( )**

There shall be one aluminum pegboard provided. The pegboard shall be installed on the back wall of compartment D2.

The pegboard shall be .188" thick with .20" diameter holes punched 1.00" on center in a pegboard pattern.

The board shall be spaced 1.00" from the wall to provide room for fasteners.

**AIR BAG STORAGE**

**Bidder Complies: Yes ( ) No ( )**

There shall be a three (3) racks installed for storing three (3) air bags in the install three to the bottom of each shelf and tray in P1 compartment.

The rack shall be fabricated from .125" aluminum, painted to match the compartment interior. The rack shall have half moon cutouts for grabbing the air bag. Velcro straps shall be installed to hold the air bags in place.

The size of the air bags shall be Sizes One (1) KPI-1 – 6" x 6" x 5/8" One (1) KPI-3 – 6" x 12" x 5/8" One (1) KPI-5 – 10" x 10" x 5/8" One (1) KPI-12 – 15" x 15" x 3/4" Two (2) KPI-17 – 15" x 21" x 3/4" Two (2) KPI-22 – 20" x 20" x 3/4" One (1) KPI-32 – 24" x 24" x 3/4".

**PERMANENTLY MOUNTED SHELF****Bidder Complies: Yes ( ) No ( )**

A permanently mounted compartment shelf shall be provided. A total of two (2) shall be installed One in D3 even with the bottom of the ladder storage and one in forward portion of P3, 38" above the floor.

**MOUNTING TRACKS****Bidder Complies: Yes ( ) No ( )**

There shall be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks shall not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

The tracks shall be provided in each compartment except for the one that contains the pump operator's panel.

**ADJUSTABLE SHELVES****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) shelf, with a minimum capacity of 500 pounds provided. The shelf construction shall consist of aluminum with 2.00" sides. Each shelf shall be painted Spatter Gray as standard. Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves shall be held in place by .12" thick stamped plated brackets and bolts.

The location of the one (1) shelf shall be to be determined.

**RUB RAIL****Bidder Complies: Yes ( ) No ( )**

Bottom edge of the side compartments shall be trimmed with a bright aluminum extruded rub rail.

Trim shall be 3.12" high with 1.50" flanges turned outward for rigidity.

The rub rails shall not be an integral part of the body construction, which allows replacement in the event of damage.

Rub rails shall be attached with bolts and spaced from the body with isolators that shall help to absorb any moderate impact without damaging the body.

**BODY FENDER CROWNS****Bidder Complies: Yes ( ) No ( )**

Polished stainless steel fender crowns shall be provided around the rear wheel openings.

A brushed stainless steel unpainted fender liner shall be provided to avoid paint chipping. The liners shall be removable to aid in the maintenance of rear suspension components.

A dielectric barrier shall be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

The fender crowns shall be held in place with stainless steel screws that thread directly into a composite nut and not directly into the parent body sheet metal to eliminate dissimilar metals contact and greatly reduce the chance for corrosion.

**HARD SUCTION HOSE****Bidder Complies: Yes ( ) No ( )**

Two (2) lengths of 6.00" clear corrugated PVC hard suction hose, 10' in length, shall be provided. The hose shall be equipped with a long handle female coupling on one (1) end and a rocker lug male coupling on the other end. Couplings shall be hard coated aluminum.

**HOSE TROUGHS****Bidder Complies: Yes ( ) No ( )**

Two (2) stainless steel hard suction hose troughs shall be provided.

The troughs shall be installed in the hatch compartment located on the driver's.

The troughs shall be installed side by side with an aluminum treadplate door at the rear. The door shall have a lift and turn latch.

A floor shall be provided above the hard suction hose inside the hatch compartment to allow storage of addition equipment in the compartment.

- One (1) handrail shall be provided mounted install at the rear of the body, driver's side.

**AIR BOTTLE STORAGE INSERT**

**Bidder Complies: Yes ( ) No ( )**

A total of four (4) inserts shall be provided for the air bottle storage compartments.

The inserts shall be "W" shaped and be formed from composite materials.

**AIR BOTTLE STORAGE (Double)**

**Bidder Complies: Yes ( ) No ( )**

A total of four (4) air bottle compartments shall be provided and two on the passenger's side and two driver's side. The air bottle compartment shall be 15.00" wide x 7.50" tall x 26.00" deep. A stainless steel door with a chrome plated latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

**EXTENSION LADDER**

**Bidder Complies: Yes ( ) No ( )**

There shall be a 24', two (2) section aluminum, Duo-Safety, Series 900-A extension ladder provided.

**ROOF LADDER**

**Bidder Complies: Yes ( ) No ( )**

There shall be a 14' aluminum, Duo-Safety, Series 775-A roof ladder provided.

**LADDER STORAGE**

**Bidder Complies: Yes ( ) No ( )**

The ladders shall be stored inside the upper section of the driver's side compartments. This ladder rack shall reduce the depth of the upper section in the side compartments.

A partition shall be installed inside the compartment on the side of the rack to allow for equipment storage and to conceal the ladders.

The ladders shall be banked in separate storage troughs.

The ladder storage assembly shall be fabricated of stainless steel track channels to aid in loading and removal of ladders.

Rear of the ladder storage area shall have a vertically hinged smooth aluminum door with lift-and-turn latches to contain the ladders.

**FOLDING LADDER**

**Bidder Complies: Yes ( ) No ( )**

One (1) 10' aluminum Series 585-A Duo-Safety folding ladder shall be installed in the driver side pike pole/folding ladder.

**PIKE POLE, 10'**

**Bidder Complies: Yes ( ) No ( )**

One (1) pike pole 10' long DUO Safety with a fiberglass handle shall be provided and located upper body compartment.

**PIKE POLE, 8'**

**Bidder Complies: Yes ( ) No ( )**

One (1) pike pole, 8' long DUO Safety with a fiberglass handle shall be provided and located upper body compartment.

**PIKE POLE 6 FT, PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) 6 ft pike pole or plaster hook mounted in a bracket fastened to the apparatus.

The pike pole is not on the apparatus as manufactured. The fire department shall provide and mount the pike pole.

**PIKE POLE/FOLDING LADDER COMPARTMENT**

**Bidder Complies: Yes ( ) No ( )**

One (1) pike pole compartment shall be provided, recessed in the upper, inside part of body compartment on the driver's side. The compartment shall be equipped with two (2) aluminum tubes to hold two (2) pike poles and a stainless steel trough for the folding ladder. The door shall be made of aluminum treadplate and have a lift and turn latch.

One (1) compartment shall be provided, recessed in the upper, inside part of body compartment on the passenger's side for storage of long handle tools. The door shall be made of aluminum treadplate and have a lift and turn latch.

**PIKE POLE STORAGE**

**Bidder Complies: Yes ( ) No ( )**

Stainless steel U-shaped trough be used for the storage of one (1) pike pole, with D-handle style grip, shall be provided and installed located inside the log handle tool storage compartment at the rear of the body, passenger's side.

**LADDER, TOP ACCESS**

**Bidder Complies: Yes ( ) No ( )**

A wide easy climbing access ladder, constructed of aluminum rungs and extruded aluminum rails, shall be provided on the right side at the rear of the apparatus. The inside climbing area of the ladder shall be 13.75" wide

The lower section of the ladder shall be retractable into the upper section to eliminate interference with the rear FMVSS lights. When lowered the bottom rung shall be lower than the body, approximately 16.00" to 20.00" from the ground to allow a lower first step height.

The ladder shall be slanted when in use for easy access, and fold against the body for storage to reduce the overall length. Corrosion resistant, stainless steel spring-loaded locks shall hold the ladder in place.

This ladder shall activate the Do Not Move Truck indicator, in the cab, if not in the stowed position when the parking brake is disengaged.

**PUMP**

**Bidder Complies: Yes ( ) No ( )**

Pump shall be a low profile, 1500 gpm single stage midship mounted centrifugal type, mounted below the cab. The pump shall have a 15 percent reserve capacity to allow for extended time between pump rebuild. To ensure efficient pump/vehicle design the capacity to weight ratio shall not be less than 1.5:1.

The pump casing shall consist of three (3) discharge outlets, one (1) to each side in line with the impeller and one (1) to the rear. The pump casing shall incorporate two (2) water strippers to maintain radial balance.

Pump shall be the Class A type.

Pump shall be certified to deliver the percentage of rated discharge from draft at pressure indicated below:

- 100 percent of rated capacity at 150 psi net pump pressure
- 70 percent of rated capacity at 200 psi net pump pressure
- 50 percent of rated capacity at 250 psi net pump pressure

The pump shall have the capacity to deliver the percentage of rated discharge from a pressurized source as indicated below:

- 135 percent of rated capacity at 100 psi net pump pressure from a 5 psi source

Pump body shall be fine-grained gray iron. Pump shall incorporate a heater/cooling jacket integral to the pump housing.

The impeller shall be high strength vacuum cast bronze alloy accurately machine balanced and splined to a ten 10) spline stainless steel pump shaft for precision fit, exceptional durability, and efficiency. Double replaceable reverse flow labyrinth type bronze wear ring design shall help to minimize end thrust. The impeller shall be a twisted vane design to create higher lift. No keyed shafts shall be acceptable.

The pump shall include o-ring gaskets throughout the pump.

Deep groove radial type oversize ball bearings shall be provided. The bearings shall be protected at the openings from road dirt and water with an oil seal and water slinger.

The pump shall have a flat, patterned area on the top of the pump intake wye to allow standing for plumbing maintenance. The main inlet manifold shall be 6.00" in diameter and shall have a low profile design to facilitate low crosslays and high flows.

For ease of service, the pump housing, intake wye, impeller, mechanical seal, and gear case shall be accessible from above the chassis frame by tilting the cab. The intake wyes shall be removable without having to remove the main intake casting. Removal of the main inlet wyes shall provide access to the impeller, mechanical seal, and wear ring. (No exception).

The tank to pump line and the primary discharge line shall be the only piping required to be removed for overhaul.

For ease of service and overhaul there shall be no piping or manifolding located directly over the pump. (No exception).

### **PUMP MOUNTING**

**Bidder Complies: Yes ( ) No ( )**

Pump shall be mounted to the chassis frame rails directly below the crew cab, to minimize wheelbase and facilitate service, using rubber isolators in a modified V pattern that include two (2) central mounted isolators located between the frame rails and one (1) on each side outside the frame rails. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump. Each isolator shall be 2.55" in total outside diameter and shall be rated at 490 lb. The pump shall be completely accessible by tilting the cab with no piping located directly above the pump.

### **MECHANICAL SEALS**

**Bidder Complies: Yes ( ) No ( )**

Silicon carbide mechanical seals shall be provided. The seals shall be spring loaded and self-adjusting. The seals shall have a minimum thermal conductivity of 126 W/m\*K to run cooler. Seals shall have a minimum hardness of 2800 kg/mm<sup>2</sup> to be more resistant to wear, and have thermal expansion characteristics of no more than 4.0 X10<sup>-6</sup>mm/mm\*K to be more resistant to thermal shock.

### **PUMP GEARCASE**

**Bidder Complies: Yes ( ) No ( )**

Pump gearcase shall be a pressure-lubricated gearcase to cool, lubricate, and filter the oil. The gearcase shall include an auxiliary PTO opening. The gearcase shall be constructed of lightweight aluminum, and impregnated with resin in accordance to MIL Spec MIL-I-17563. A dipstick, accessible by tilting the cab, shall be provided for easy fluid level checks. A filter screen shall be provided for long life.

The gearcase shall consist of two (2) gears to drive the pump impeller and one (1) for the auxiliary PTO.

The auxiliary PTO opening shall provide for the addition of PTO driven accessories.

The pump shall be driven through the rear engine power take-off and clutch. The rear engine power take-off drive shall be live at all times to allow for pump and roll applications. Rear engine power take-off's allow for high horsepower and torque ratings needed for large pump applications, and is a proven drive system throughout the rugged construction industry. (No exception).

### **CLUTCH**

**Bidder Complies: Yes ( ) No ( )**

There shall be a heavy-duty electric clutch mounted directly to the front of the pump to engage and disengage the pump without gear clash. The clutch shall be a multiple disc design for maximum torque. The clutch shall be fully self-adjusting to provide automatic wear compensation, and consistent torque throughout the life of the clutch. Positive engagement and disengagement shall be provided through a high efficient and dependable magnetic system to assure superior performance. The clutch

shall have a 500 lb-ft rating. Clutch shall be of a time-tested design used in critical military applications. (No exception).

### **PUMPING MODE**

**Bidder Complies: Yes ( ) No ( )**

Pump shall provide for both pump and roll mode and stationary pumping mode.

Stationary pumping mode shall be accomplished by stopping the vehicle, setting the parking brake and engaging the water pump switch on the cab switch panel. The transmission shall shift to "Neutral" range automatically when the parking brake is set. The "OK to Stationary Pump" indicator shall also illuminate when the parking brake is set. There shall be an automatic opening tank to pump valve and an automatic opening recirculation valve with the stationary mode so the operator does not have to leave the cab. If the vehicle is equipped with a foam system or CAFS system, these systems shall be engaged from the cab switch panel as well.

Pump and roll mode shall be accomplished by the use of the main pump and shall not require the use of a secondary pump. The "OK to Pump & Roll" indicator shall be illuminated when the vehicle is in first gear. If pump and roll is desired by the operator, the operator shall engage the "Pump & Roll" and "Water Pump" switches on the cab switch panel. There shall be an automatic opening tank to pump valve and an automatic opening recirculation valve with the pump and roll mode so the operator does not have to leave the cab. The foot throttle shall be applied by the operator as needed. There shall be a 1200 engine rpm limit when in the pump and roll mode.

Stopping pump and roll mode shall be accomplished by stopping the vehicle and setting the parking brake. The "OK to Pump & Roll" indicator shall turn off, the "OK to Stationary Pump" indicator shall illuminate and the transmission shall automatically shift to neutral.

Stopping the stationary pump mode shall be accomplished by pressing the "Water Pump" switch down to disengage the pump.

### **PUMP SHIFT**

**Bidder Complies: Yes ( ) No ( )**

Pump shall be engaged in not more than two steps, by simply setting the parking brake, which shall automatically put the transmission into neutral, and activating a rocker switch in the cab. Switches in the cab shall also allow for water, foam, or CAFS if equipped, and activate the appropriate system to preset parameters. The engagement shall provide simple two-step operation, enhance reliability, and completely eliminate gear clash. The shift shall include the indicator lights as mandated by NFPA. A direct override switch shall be located behind a door in the lower pump operator's panel. The switch shall automatically disengage when the door is closed.

As the parking brake is applied, the pump panel throttle shall be activated and deactivate the chassis foot throttle for stationary operation.

Pump and roll operation shall be available by releasing the parking brake with the pump in the pumping mode. Releasing the parking brake shall activate the chassis foot throttle, and deactivate the pump panel throttle. To protect from accidental pump overheating, the pump shall automatically disengage when the truck transmission shifts into second gear.

### **TRANSMISSION LOCK UP**

**Bidder Complies: Yes ( ) No ( )**

Transmission lock up is not required as transmission shall automatically shift to neutral as soon as the parking brake is set.

### **AUXILIARY COOLING SYSTEM**

**Bidder Complies: Yes ( ) No ( )**

A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. A water-to-coolant heat exchanger shall be used.

### **INTAKE RELIEF VALVE**

**Bidder Complies: Yes ( ) No ( )**

An Akron relief valve shall be installed on the suction side of the pump preset at 125 psig.

Relief valve shall have a working range of 75 psig to 200 psig.

Outlet shall terminate below the frametrails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag.

Control shall be located behind an access door at the right (passenger's) side pump panel.

### **PRESSURE CONTROLLER**

**Bidder Complies: Yes ( ) No ( )**

A pressure Governor shall be provided. An electric pressure governor shall be provided which is capable of automatically maintaining a desired preset discharge pressure in the water pump. When operating in the pressure control mode, the system shall automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow, within the discharge capacities of the water pump and water supply.

A pressure transducer shall be installed in the water discharge of the pump. The transducer continuously monitors pump pressure sending a signal to the Electronic Control Module (ECM).

The governor can be used in two (2) modes of operation, RPM mode and pressure modes.

In the RPM mode, the governor can be activated after vehicle parking brake has been set. When in this mode, the governor shall maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In the pressure mode, the governor system can only operate after the fire pump has been engaged and the vehicle parking brake has been set. When in the pressure mode, the pressure controller monitors the pump pressure and varies engine speed to maintain a precise pump pressure. The pressure controller shall use a quicker reacting J1939 database for engine control (excluding Cat engines).

A preset feature allows a predetermined pressure or rpm to be set.

A pump cavitation protection feature is also provided which shall return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five (5) seconds.

The throttle shall be a vernier style control, with a large control knob for use with a gloved hand. A throttle ready light shall be provided adjacent to the throttle control. A large .75" RPM display shall be provided to be visible at a glance.

Check engine, and stop engine indicator lights shall be provided for easy viewing.

Large .75" push buttons shall be provided for menu, mode, preset, and silence selections.

The water tank level indicator shall be incorporated in the pressure governor.

A fuel level indicator shall be incorporated in the pressure controller.

A pump hour meter shall be incorporated in the pressure controller.

The pressure controller shall incorporate monitoring for engine temperature, oil pressure, fuel level alarm, and voltage. Pump monitoring shall include, pump gearcase temperature, error codes, diagnostic data, pump service reminders, and time stamped data logging, to allow for fast accurate trouble shooting. It shall also notify the driver/engineer of any problems with the engine and the apparatus. Complete understandable messages shall be provided in a 20-character display, providing for fewer abbreviations in the messages. An automatic dim feature shall be included for night operations.

The pressure controller shall include a USB port for easy software upgrades, which can be downloaded through a USB memory stick, eliminating the need for a laptop for software installations.

A complete interactive manual shall be provided with the pressure controller.

### **PRIMING PUMP**

**Bidder Complies: Yes ( ) No ( )**

The priming pump shall be a Trident Emergency Products compressed air powered; high efficiency multistage venturi based AirPrime System, conforming to standards outlined in NFPA pamphlet #1901.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control shall open the priming valve and start the pump primer.

A second priming valve shall be plumbed to the rear suction piping. The second control shall be located at the pump operator's panel.

### **RECIRCULATING LINE, WITH CHECK VALVE**

**Bidder Complies: Yes ( ) No ( )**

A .50" diameter recirculating line, from the pump to the water tank, shall be furnished with a control installed at the pump operator's control panel. A check valve shall be provided in this line to prevent the back flow of water from the tank to the pump if the valve is left in the open position.

### **TEMPERATURE RELIEF VALVE**

**Bidder Complies: Yes ( ) No ( )**

A temperature relief valve shall be provided on the pump to monitor pump water temperature. This valve shall automatically relieve water from the pump when the temperature of the pump water exceeds 120 degrees Fahrenheit.

### **PUMP MANUALS**

**Bidder Complies: Yes ( ) No ( )**

Two (2) pump manuals from the pump manufacturer shall be furnished in compact disc format with the apparatus. Manuals shall cover pump operation, maintenance, overhaul, and parts.

### **PLUMBING**

**Bidder Complies: Yes ( ) No ( )**

All inlet and outlet plumbing, 3.00" and smaller, shall be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with high-tensile polyester braid. Small diameter secondary plumbing such as drain lines shall be stainless steel, brass or hose.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with Victaulic or rubber couplings.

Plumbing manifold bodies shall be ductile cast iron or stainless steel.

All lines shall drain through a master drain valve or shall be equipped with individual drain valves. All individual drain lines for discharges shall be extended with a hose to drain below the chassis frame.

All water carrying gauge lines shall be of flexible polypropylene tubing.

### **MAIN PUMP INLETS**

**Bidder Complies: Yes ( ) No ( )**

A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

Main pump inlets shall not be located on the main operator's panel and shall maintain a low connection height by terminating below the top of the chassis frame rail.

The main pump inlets shall have National Standard Threads with a long handle chrome cap.

The cap shall be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (No exception)

### **INLET BUTTERFLY VALVE**

**Bidder Complies: Yes ( ) No ( )**

One (1) big flow valve shall be provided on the driver's side main pump inlet.

The 6.00" inlet valve shall be provided with a built-in, adjustable pressure relief valve and a 3/4" bleeder valve shall be provided on the inlet side of the valve.

The valve shall be capable of flowing 1950 GPM at 1 PSI pressure drop.

Valve shall be electrically operated. An electric actuator, with valve position indicator lights, shall be provided at the pump operator's panel.

**INLET BUTTERFLY VALVE**

**Bidder Complies: Yes ( ) No ( )**

One (1) big flow valve shall be provided on the passenger's side main pump inlet.

The 6.00" inlet valve shall be provided with a built-in, adjustable pressure relief valve and a 3/4" bleeder valve shall be provided on the inlet side of the valve. The bleeder valve controls shall be located at the threaded connection and at the pump operator's panel.

The valve shall be capable of flowing 1950 GPM at 1 PSI pressure drop.

Valve shall be electrically operated. An electric actuator, with valve position indicator lights, shall be provided at the pump operator's panel.

**VALVES**

**Bidder Complies: Yes ( ) No ( )**

All ball valves shall be Akron Brass in-line valves. The Akron valves shall be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves shall have a ten (10) year warranty.

**INLET (Left Side)**

**Bidder Complies: Yes ( ) No ( )**

On the left side pump panel shall be one (1)-2.50" auxiliary suction terminating in 2.50" National Standard Hose Thread. The auxiliary suction shall be provided with a strainer, chrome swivel and plug. The piping and valve shall be 3.00" for this inlet.

**INLET (Right Side)**

**Bidder Complies: Yes ( ) No ( )**

On the right side pump panel, shall be one (1) - 3.00" auxiliary suction terminating in 2.50" National Standard Hose Thread. The auxiliary suction shall be provided with strainer, chrome swivel and plug.

The location of the valve for the two (2) inlets shall be recessed behind the pump panel.

**ANODE, INLET**

**Bidder Complies: Yes ( ) No ( )**

A pair of sacrificial zinc anodes shall be provided in the water pump inlets to protect the pump from corrosion.

**INLET CONTROL**

**Bidder Complies: Yes ( ) No ( )**

Control for the side auxiliary inlet(s) shall be located at the inlet valve.

**INLET (Rear)**

**Bidder Complies: Yes ( ) No ( )**

A 6.00" inlet with screen shall be provided using 5.00" piping and a 5.00" butterfly valve.

The screen shall provide cathodic protection against corrosion in the piping.

The piping shall contain only large radiused elbows, no mitered joints.

The plumbing shall be routed to the rear below the water tank and between the frame rails. (no exception)

The inlet shall terminate along the driver's side, rear at tailboard height side at the rear at tailboard height.

A bleeder valve shall be located at the threaded connection.

The rear suction shall have a National Standard hose thread adapter with a rocker lug chrome plated cap.

The cap shall be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

**CONTROL, REAR INLET**

**Bidder Complies: Yes ( ) No ( )**

The rear suction shall be gated with an electric operated control at the pump operator's panel. The control shall be momentary to allow the valve to be gated for ease of operation. Indicator lights shall be provided to show if the valve is open or closed.

**INTAKE RELIEF VALVE**

**Bidder Complies: Yes ( ) No ( )**

An intake relief valve, preset at 125 psig, shall be installed on the inlet side of the valve.

Relief valve shall have a working range of 75 psig to 250 psig.

Outlet shall terminate below the framerrails.

A .75" bleeder shall be provided.

**INLET BLEEDER VALVE**

**Bidder Complies: Yes ( ) No ( )**

A .75" bleeder valve shall be provided for each side gated inlet. The valves shall be located behind the panel with a swing style handle control extended to the outside of the panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders shall be routed below the chassis frame rails.

**TANK TO PUMP**

**Bidder Complies: Yes ( ) No ( )**

The tank to pump line shall have a 3.00" Akron 8800 series full flow ball valve with "R-1" style handle. This valve shall be controlled by an air actuated cylinder. The cylinder shall be large enough to assure positive opening and closing of the valve. The red rocker switch controls shall be located on the left pump operator's panel, be properly labeled as it's function and feature "green" valve open and "red" valve closed indicator lights.

A 3.00" one-way full flow check valve shall be provided in the tank suction line to prevent back flow to the tank.

**TANK REFILL**

**Bidder Complies: Yes ( ) No ( )**

A 2.00" combination tank refill and pump re-circulation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

**DISCHARGE OUTLETS (Left Side)**

**Bidder Complies: Yes ( ) No ( )**

There shall be two (2) discharges with a 2.50" valves on the left side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. Discharges shall be located below the cab, and shall be no higher than the top of the chassis frame rail. Discharges shall not be located on the pump operator's panel. Lever controls shall be provided at the valve.

**DISCHARGE OUTLETS (Right Side)**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) discharge with a 2.50" valve on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. The discharge shall be located below the crew cab, and shall be no higher than the top of the chassis frame rail. The discharge shall be electrically controlled at the pump operator's panel.

**DISCHARGE OUTLET, 4.00"**

**Bidder Complies: Yes ( ) No ( )**

There shall be a 4.00" discharge outlet with a 4.00" Akron valve body installed on the right side of the apparatus, below the cab, and shall be no higher than the top of the chassis frame rail, terminating with a male 4.00" National Standard hose thread. This discharge outlet shall be electrically controlled at the pump operator's control panel.

**FRONT BUMPER TURRET DISCHARGE and OUTLET****Bidder Complies: Yes ( ) No ( )**

There will be a Task Force Tips Tornado front bumper turret, model Y2-E84A, piped to the passenger's side of the front bumper extension. The monitor will be equipped with a disconnect to allow the monitor to be easily removed to tilt the cab. NFPA Stacked tips, model FS-3STACK, and a model HMDC-TO-ERP-1.5NH automatic nozzle will be provided.

The turret will have a horizontal rotation of 180 degrees and operate from 90 degrees above to 60 degrees below horizontal. The horizontal rotation and automatic oscillation will be driven by a 12 volt DC direct drive motor/actuator.

The turret will be remotely controlled from a model Y4E-JS-GT joy stick control box located in the cab, between the driver and passenger. The joy stick control box will have the capability to preset the maximum valve position. A wireless remote operator station, model YE-RF-900, will also be provided. A position indicator, TFT model Y4E-Disp, will be provided in the cab.

Plumbing will consist of a 2.00" valve with 2.50" piping and flexible hose according to the design requirements of the chassis.

The 2.00" valve will operate with the turret joystick in the cab, or the wireless remote any time either switch is activated. This valve will be installed in the pumphouse to prevent the outlet line from freezing.

Automatic drains will be provided at all low points of piping.

**DISCHARGE OUTLET (Front)****Bidder Complies: Yes ( ) No ( )**

There will be an additional 2.50" gated discharge outlet, with a swivel, piped to the driver's side next to frame extension of the front bumper extension. Plumbing will consist of 2.50" piping from the pump house. A 2.50" manually controlled full flow ball valve mounted in the pump house, controlled at the pump operator's panel, will be provided.

**DISCHARGE OUTLET (Rear)****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) discharge piped to the rear of the hose bed, on driver's side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing shall consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel. Discharge shall terminate with 2.50" NST thread. Discharge piping shall be schedule 10 304L welded or formed stainless steel and routed through the water tank.

**DISCHARGE CAPS****Bidder Complies: Yes ( ) No ( )**

Chrome plated, rocker lug, caps with chains shall be furnished for all side discharge outlets.

The caps shall be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

**OUTLET BLEEDER VALVE****Bidder Complies: Yes ( ) No ( )**

A .75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails.

**ELBOWS, REAR OUTLETS****Bidder Complies: Yes ( ) No ( )**

The 2.50" discharge outlets, located at the rear of the apparatus, shall be furnished with a 2.50"(F) National Standard hose thread x 2.50"(M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be the VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected. (no exception)

**ELBOW, 4.00" OUTLET**

**Bidder Complies: Yes ( ) No ( )**

The 4.00" outlet shall be furnished with a 4.00"(F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

**DISCHARGE OUTLET CONTROLS**

**Bidder Complies: Yes ( ) No ( )**

The discharge outlets shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism shall indicate the position of the valve or an indicator shall be provided to show when the valve is closed.

The passenger side discharges shall be controlled by an Akron 9315 Navigator controller with the manual override located on the passenger side pump panel. In addition to valve position, each Akron 9315 Navigator controller shall include a pressure display.

The controller unit shall have solid state electronics to provide easy, two (2) button open and close valve position capability with valve position indicator lights, and current limiting valve motor stopping capability. The unit shall be in water resistant brass housing and shall come with all required installation cables and harnesses.

All other outlets shall have manual swing handles that operate in a vertical up and down motion. These handles shall be able to lock in place to prevent valve creep under pressure.

**CROSSLAY HOSE BEDS**

**Bidder Complies: Yes ( ) No ( )**

Two (2) crosslays with 1.50" outlets shall be provided. Each bed to be capable of carrying single stack 200' of 1.75" hose double jacketed hose and shall be plumbed with 2.00" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.00" quarter turn ball valve. Threaded pipe shall not be acceptable. Crosslays shall be low mounted with the bottom of both crosslay trays for safe reloading and deployment. The hosebeds shall be full width of the body compartments.

Outlets to be equipped with a 1.50" National Standard hose thread 90-degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls shall be at the pump operator's panel.

A removable tray shall be provided for the crosslay hosebed. The crosslay tray shall be constructed of black poly to provide a lightweight sturdy tray. Two (2) hand holes shall be in the floor and additional hand holes shall be provided in the sides for easy removal and installation from the compartment. The floor of the trays shall be perforated to allow for drainage and hose drying. Trays shall be held in place by a mechanical spring loaded stainless steel latch that automatically deploys upon loading the trays to hold the trays in place during transit.

**CROSSLAY HOSE BED, 2.50"**

**Bidder Complies: Yes ( ) No ( )**

One (1) crosslay with a 2.50" outlet shall be provided. The bed to be capable of carrying 200' of 2.5" hose of 2.5" hose and shall be plumbed with 2.50" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.50" quarter turn ball valve. Threaded pipe shall not be acceptable.

The outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located above the hose bed so that hose may be removed from either side of apparatus.

The crosslay shall be mounted low next to the 1.5" crosslays. The crosslay controls shall be at the pump operator's panel.

A removable tray shall be provided for the crosslay hosebed. The crosslay tray shall be as wide as the crosslay opening will allow and constructed of black poly to provide a lightweight sturdy tray. Two (2) hand holes shall be in the floor and additional hand holes shall be provided in the sides for easy removal and installation from the compartment. The floor of the trays shall be perforated to allow for

drainage and hose drying. Tray shall be held in place by a mechanical spring loaded stainless steel latch that automatically deploys upon loading the tray to hold the trays in place during transit.

**CROSSLAY/EQUIPMENT STORAGE ENCLOSURE FULL WIDTH**

**Bidder Complies: Yes ( )**

**No ( )**

The forward portion of the body containing the crosslays and transverse storage area shall be enclosed. The enclosure shall be provided on both sides of the body full width of the body compartmentation.

The enclosure shall be fabricated from bright aluminum treadplate painted to match the front of the body. The enclosure shall be bolted on construction.

Gortite roll-up doors shall be provided on both sides for access.

**ROLL-UP DOOR**

**Bidder Complies: Yes ( ) No ( )**

Each door shall be double faced, aluminum construction, with a painted finish to match the body compartments, and manufactured by A&A Manufacturing (Gortite).

Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from plus 300 to minus 40 degrees Fahrenheit. Hardened plastic shall not be acceptable.

A non-locking polished stainless steel lift bar shall be provided. The lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.

Door(s) shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surfaces shall be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartment(s), the spring roller assembly shall not exceed 3.00" in diameter. A roll-up door that retracts below the compartment ceiling (garage door style) shall not be acceptable.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of "open compartment door" warning lights.

All mechanical components of the door shall be warranted to be free from defects in materials and workmanship for the lifetime of the vehicle. All parts covered under this warranty shall be to the original owner.

The roll up doors exterior paint finish shall be warranted against blistering, peeling, bubbling, lack of adhesion or any other manufacturing or material defect for a period of **six (6) years**.

The roll up doors shall also be warranted against corrosion perforation for a period of **ten (10) years**.

**PUMP ACCESS COVER**

**Bidder Complies: Yes ( ) No ( )**

A gray, heat resistant vinyl cover with quarter turn fasteners shall be provided on the forward portion of the pumphouse of a PUC to aid in keeping heat inside the plumbing area, rear of the crosslays on the pump access opening.

**CROSSLAY TRAY SHELF****Bidder Complies: Yes ( ) No ( )**

The one (1) unpainted 3/16" 30.00" long shelf shall be provided for the crosslay tray. Shelf will have a 2.00" lip on the interior and sides of the shelf. The outside edge of the shelf shall not have a flange or lip. The shelf shall be secured with screws through the poly tray and 2.00" lip on the shelves. A web strap with footman loops shall be installed at the outside edge of the tray to secure the customers Blitzfire line. The shelf shall be installed in the passenger's side of the front crosslays mounted 8.5" down from the top

**TRAY, TOOL STORAGE CROSSLAY****Bidder Complies: Yes ( ) No ( )**

There shall be an additional full width poly tray provided for the crosslays. The tray shall be similar in design to the crosslay tray and shall be mounted in the upper hosebed opening. The tray shall be as large as possible.

**FOAM PROPORTIONER****Bidder Complies: Yes ( ) No ( )**

A foam proportioning system shall be provided that is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class A and B foam concentrates, including the high viscosity (6000 cps), alcohol resistant Class B foams. Operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures. The system shall automatically balance and proportion foam solution at rates from .1 percent to 9.9 percent regardless of variations in water pressure and flow, up to the maximum rated capacity of the foam concentrate pump.

The design of the system shall allow operation from draft, hydrant, or relay operation. This shall provide a versatile system to meet the demands at a fire scene.

**System Capacity**

The system shall have the ability to deliver the following minimum foam solution flow rates at accuracies that meet or exceed NFPA requirements at a pump rating of 250 psi.

200 gpm @ 6 percent

400 gpm @ 3 percent

1200 gpm @ 1 percent

Class A foam setting in .1 percent increments from .1 percent to 1 percent. Typical settings of 1 percent, .5 percent and .3 percent (maximum capacity shall be limited to the plumbing and water pump capacity).

**Control System**

The system shall be equipped with a digital electronic control display located on the pump operator's panel. Push button controls shall be integrated into the panel to turn the system on/off, control the foam percentage, direct which foam to use on a multi-tank system, and to set the operation modes (automatic, manual, draft, calibration, or flush).

The percent of injection shall have presets for Class A and Class B foam. These presets can be changed at the fire department as desired. The percent of injection shall be able to be easily changed at the scene to adjust to changing demands.

In order to minimize the use of abbreviations and interpretations, system information shall be displayed on the panel by way of .50 tall LEDs that total 14 characters (two (2) lines of seven (7) each). System on and foam pump on indicator lights shall also be included. Information displayed shall include mode of operation (automatic, manual, draft, calibration, or flush), foam supply selected (Class A or Class B), water total, foam total, foam percentage, remaining gallons, and time remaining.

The control display shall direct a microprocessor, which receives input from the systems water flow meter while also monitoring the position of the foam concentrate pump. The microprocessor shall compare the values of the water flow versus the position/rate of the foam pump, to ensure the

proportion rate is accurate. One (1) check valve shall be installed in the plumbing to prevent foam from contaminating the water pump.

### **Low Level, Foam Tank**

The control head shall display a warning message when the foam tank in use is below a quarter tank.

### **Hydraulic Drive System**

The foam concentrate pump shall be powered by a hydraulic drive system, which is automatically activated, whenever the vehicle water pump is engaged. A system that drives the foam pump via an electric motor shall not be acceptable. A large parasitic electric load used to power the foam pump can cause an overload of the chassis electrical system.

Hydraulic oil cooler shall be provided to automatically prevent overheating of the hydraulic oil, which is detrimental to system components. The oil/water cooler shall be designed to allow continuous system operation without allowing hydraulic oil temperature to exceed the oil specifications.

The hydraulic oil reservoir shall be of four (4) gallons minimum capacity and shall also be of sufficient size to minimize foaming and be located to facilitate checking oil level or adding oil without spillage or the need to remove access panels.

### **Foam Concentrate Pump**

The foam concentrate pump shall be of positive displacement, self-priming; linear actuated design, driven by the hydraulic motor. The pump shall be constructed of brass body; chrome plated stainless steel shaft, with a stainless steel piston. In order to increase longevity of the pump, no aluminum shall be present in its construction.

A relief system shall be provided which is designed to protect the drive system components and prevent over pressuring the foam concentrate pump.

The foam concentrate pump shall have minimum capacity for 12 gpm with all types of foam concentrates with a viscosity at or below 6000 cps including protein, fluoroprotein, AFFF, FFFP, or AR-AFFF. The system shall deliver only the amount of foam concentrate flow required, without recirculating foam back to the storage tank. Recirculating foam concentrate back to the storage tank can cause agitation and premature foaming of the concentrate, which can result in system failure. The foam concentrate pump shall be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.

### **External Foam Concentrate Connection**

An external foam pick-up shall be provided to enable use of a foam agent that is not stored on the vehicle. The external foam pick-up shall be designed to allow continued operation after the on-board foam tank is empty. The external foam pick-up shall be designed to allow use with training foam or colored water for training purposes.

### **Panel Mounted Strainer/External Pick-Up Connection**

A bronze body strainer/connector unit shall be provided. The unit shall be mounted to the pump panel. The external foam pick-up shall be one (1) 1.00" male connection with chrome-plated cap integrated to a 2.00" strainer cleanout cap. A check valve shall be installed in the pick-up portion of the cleanout cap. A basket style stainless steel screen shall be installed in the body of the strainer/connector unit. Removal of the 2.00" cleanout cap shall be all that is required to gain access to and remove the stainless steel basket screen. The strainer/connector unit shall be ahead of the foam concentrate pump inlet port to insure that all agent reaching the foam pump has been strained.

### **Pick-Up Hose**

A 1.00" flexible hose with an end for insertion into foam containers shall be provided. The hose shall be supplied with a 1.00" female swivel NST thread swivel connector. The hose shall be shipped loose.

### **Discharges**

The foam system shall be plumbed to the lower rear crosslay, lower front crosslay, left side of front bumper, lower center crosslay, left rear outlet and front bumper turret.

### **System Electrical Load**

The foam proportioning shall not impose an electrical load on the vehicle electrical system any greater than five (5) amps at 12VDC.

### **Tank Selector**

An electric valve shall be used for the foam supply valve. The foam supply valve shall be controlled at the foam system control head for ease of operation. The supply valve shall be electric, remote controlled, to eliminate air pockets in the foam tank supply hose.

### **Maintenance Message**

A message shall be displayed on the control head to advise when system maintenance needs to be performed. The message shall display interval for cleaning the foam strainer, cleaning for the water strainers, and changing the hydraulic oil.

### **Flush System**

The system shall be designed such that a flush mode shall be provided to allow the system to flush all foam concentrate with clear water. The flush circuit control logic shall ensure the foam tank supply valve is closed prior to opening the flush valve. The flush valve shall be operated at the foam system control head for ease of operation. The valve shall be electrically controlled and located as close to the foam tank supply valve as possible. A manual flush drain valve shall be labeled and conveniently located.

### **FOAM GENERATING SYSTEM, CAF**

**Bidder Complies: Yes ( ) No ( )**

A 140 cfm capacity compressed air foam, shall be provided. The system shall supply six (6) discharges with compressed air foam. It shall be capable of providing foam solution or compressed air foam from any of the specified CAFS discharges simultaneously. In addition, the consistency of the compressed air foam (wet to dry) from each discharge shall be adjustable. All CAF capable discharges shall have the discharge valve control, air injection control, and discharge pressure gauge mounted in a group on the operator's panel. Each CAF capable discharge shall feature a check valve to prevent reverse flows of compressed air foam that is integrated into the discharge valve. The wafer check valve shall be a type and design approved by the manufacturer of the discharge valve.

### **DISCHARGES TO CAF CAPABLE**

**Bidder Complies: Yes ( ) No ( )**

The front discharge, front turret, 3 crosslays, rear discharge discharges shall be capable of discharging compressed air foam. There is no second pump on the vehicle

### **AIR COMPRESSOR, HYDRAULIC DRIVEN**

**Bidder Complies: Yes ( ) No ( )**

An oil flooded rotary screw compressor rated for at least 140cfm @ 150psig shall be provided. The compressor shall be mounted in an area that allows for proper service and maintenance of the components. The compressor shall be driven by a hydraulic drive system. The hydraulic drive system shall be driven by the vehicle transmission through a PTO. All components of the system shall be sized and rated for the system to deliver compressed air, uninterrupted, for up to two (2) hours at a time without undue stresses, vibrations, or overheating. The air compressor shall be capable of delivering the rated capacity of the compressor when the fire pump is delivering 250gpm @120psi from tank or draft.

The hydraulic compressor drive system shall be comprised of a variable displacement piston type hydraulic pump supplying a fixed displacement piston hydraulic motor. The displacement of the hydraulic pump shall be controlled by a fixed orifice type, load sensing, hydraulic circuit. The hydraulic system shall have a properly sized reservoir, cooler, filter(s) and accessory components. The components shall be mounted in the vehicle body to facilitate routine maintenance operations. The

hydraulic drive design shall be certified by manufacturer of the primary components as suitable for the intended use and duty cycle.

All components of the air compressor and drive system shall be readily available on the domestic air compressor / hydraulic market (USA). The compressor shall be designed and assembled by the apparatus manufacturer, using standard components available to air compressor OEM's. The hydraulic drive system shall be assembled by the apparatus manufacturer using standard mobile hydraulic components.

The PTO shall be a 10 bolt SAE type mounted to the PTO opening of the vehicle's Allison transmission. The PTO shall be rated for at least 20 percent more torque throughput than the air compressor drive system shall demand.

The air/oil separator for the compressor system shall be easily serviced. The separator shall be inside a cast iron compressor base, receiver combination. The separator shall consist of two stages. The first stage being a centrifuge arrangement engineered into the compressor base. The second stage shall be a cartridge arrangement inside an enclosure featuring an "inside to outside" flow of the air through the cartridge. The cartridge shall be serviceable by the removal of the compressor system minimum pressure valve. The separation system shall be capable of at least 140 SCFM flow at 40 psi tank pressure. The allowable oil carry over shall be no more than 10 parts per million oil in air.

A cast iron air/oil receiver tank shall be provided. The tank shall be constructed and tested to the applicable standards as addressed by NFPA 1901 for CAF system air compressor tanks. The tank shall be mounted in a manner that allows easy access to the fill opening and the level sight gauges. The tank shall be of the vertical type with the minimum pressure valve of the compressor system integrated into the top of the tank. The minimum pressure valve shall be rotatable to facilitate different discharge arrangements from the tank.

The compressor lubricant shall be filtered by spin on type filter. The filter shall have a 25 Micron rating and a safety bypass valve. The filter assembly shall be mounted and located in a manner that allows easy service. A thermostat valve shall be integrated into the oil filter and compressor base housing. The thermostat shall route lubricant to the oil cooler to maintain the compressor's temperature between minimum and maximum limits.

A water/oil cooler shall be provided to cool the compressor. The cooler shall be sized to meet the duty cycle requirements as specified.

A heavy duty, automotive type, dry element air cleaner shall be provided. The air cleaner shall be mounted in such a manner as to be easily serviced. The air cleaner shall be mounted, or the inlet of the filter routed, in such a manner that the air cleaner intakes fresh air from outside the vehicle body. In addition, the compressor air intake shall be screened to prevent debris from entering the filter housing.

The system shall have the following safety or monitoring devices.

- Minimum pressure valve

- Compressor lube temperature gauge

- Compressor system pressure gauge

- Air flow meter

- Compressor lube temperature warnings, audible and visible

- High pressure relief valve on receiver tank

- Applicable warning and information decals

The air compressor shall be controlled by a modulating inlet valve mounted on the air compressors inlet port. A controller shall be provided that senses air pressure and controls the delivery volume of the air compressor while maintaining a constant pressure. The controller shall feature an automatic balancing system to maintain the air pressure within plus or minus 5% of the discharge pressure of the fire pump, throughout a pressure range of 60psi to 150psi.

The compressor system shall have operators controls at the pump panel for the following functions.

Automatic pressure regulation, to match the compressor discharge pressure to the pump discharge pressure.

Fixed pressure regulation, to set the air pressure at on pressure for the use of air tools, etc.

PTO engagement switch

PTO engaged indicator light

#### **AIR TOOL OUTLET**

**Bidder Complies: Yes ( ) No ( )**

A 1.00" air outlet supplied by the foam system compressor shall be provided on one of the pump panels. This outlet shall have a chrome plated 1.0" FNST swivel fitting at the panel and a valve behind the pump panel. The outlet shall be capable of supplying the capacity of the compressor. A mating 1.0" MNST x 1.0" NPT fitting shall be supplied with loose equipment.

#### **REFILL, SINGLE FOAM TANK**

**Bidder Complies: Yes ( ) No ( )**

The foam system's proportioning pump shall be used to fill the Class A foam tank. This shall allow use of the auxiliary foam pick-up to pump the foam from pails or a drum on the ground into the foam tank. A foam shut-off switch shall be installed in the fill dome of the tank to shut the system down when the tank is full. The fill operation shall be controlled by a mode in the foam system controller stating TANK FILL. While the proportioner pump is filling the tank, the controller shall display FILL TANK. When the tank is full, as determined by the float switch in the tank dome, the pump shall stop and the controller shall display TANK FULL.

#### **AUXILIARY AIR OUTLET**

**Bidder Complies: Yes ( ) No ( )**

One (1) air outlet shall be supplied by the compressor for the CAFS. The outlet shall provide air to an air reel for tool usage. An adjustable regulator and gauge shall be provided near the reel for pressure regulation with a moisture separator. When the compressed air foam system is used the performance shall be reduced if the air outlets are in use at the same time. An oiler shall be provided as a part of the system to provide lubricant to air tools attached to the air reel.

#### **CAFS CONTROL**

**Bidder Complies: Yes ( ) No ( )**

A second air injection switch shall be provided for the turret in the cab.

#### **CAFS CONTROL**

**Bidder Complies: Yes ( ) No ( )**

One (1) air injection locking rocker switch shall be provided in the cab for the turret.

#### **COMPRESSOR COVER OVER PUMP**

**Bidder Complies: Yes ( ) No ( )**

The CAFS compressor shall be totally enclosed with a cover constructed of .125" bright aluminum treadplate. The cover shall be provided with adequate ventilation (louvers or knock outs as required for the specific compressor) and have any necessary access doors for maintenance or operation. The cover shall be removable.

#### **FOAM SYSTEM TRAINING**

**Bidder Complies: Yes ( ) No ( )**

The fire department shall order one (1) vehicle with this foam system. The operation of the foam system shall be demonstrated at the plant where the apparatus was manufactured.

This demonstration shall include:

- A review of the foam system manual, emphasizing key areas

- A walk around review of the system components on the finished truck
- A hands-on foam system start-up and foam discharge session
- Instructions on the use of the manual overrides
- A demonstration explaining the proper way to shutdown and flush the foam system.

### **FOAM TANK**

**Bidder Complies: Yes ( ) No ( )**

The foam tank shall be an integral portion of the polypropylene water tank. The cell shall have a capacity of 40 gallons of foam with the intended use of Class A foam. The brand of foam stored in this tank shall be silvex. The foam cell shall reduce the capacity of the water tank. The foam cell shall have a screen in the fill dome and a breather in the lid.

### **FOAM TANK DRAIN**

**Bidder Complies: Yes ( ) No ( )**

A system of 1.00" foam tank drains shall be provided, integrated into the foam systems strainer and tank to foam pump valve management system. The tank to pump hoses running from the tank(s) to the panel mounted strainer shall 1.00" diameter. The foam system controller shall have a mode that allows for a given foam valve to be opened at will. Flow of foam from the tank valve to the strainer shall be usable as a tank drain mode.

An adaptor shall be supplied, that allows the 1.00" foam intake screen to assembly to be used as a drain outlet. The standard supplied 1.00" foam pick up hose shall be attached to the screen assembly by way of the adapter. The drain mode shall allow the operator to open and close the tank valve as required from the control head, to drain foam and re-fill foam containers through the connected hose, without foam spillage beneath the vehicle.

### **PUMP CONTROL PANELS (Left Side Control)**

**Bidder Complies: Yes ( ) No ( )**

Pump controls and gauges shall be located midship at the left (driver's) side of the apparatus and properly identified.

The main pump operator's control panel shall be completely enclosed and located in the forward section of the body compartment, to protect against road debris and weather elements. The pump operator's panels shall be no more than 31.00" wide, and made in four (4) sections with the center section easily removable with simple hand tools. For the safety of the pump operator, there shall be no discharge outlets or pump inlets located on the main pump operators panel.

Layout of the pump control panel shall be ergonomically efficient and systematically organized. The upper section shall contain the master gauges. This section shall be angled down for easy visibility. The center section shall contain the pump controls aligned in two horizontal rows. The pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable) shall be located on or adjacent to the center panel, on the side walls for easy operation and visibility. The lower section shall contain the outlet drains.

Manual controls shall be easy moving 8" long lever style controls that operate in a vertical, up and down swing motion. These handles shall have a 2.25" diameter knob and be able to lock in place to prevent valve creep under any pressure. Bright finish bezels shall encompass the opening, be securely mounted to the pump operator's panel, and shall incorporate the discharge gauge bezel. Bezels shall be bolted to the panel for easy removal and gauge service. The driver's side discharges shall be controlled directly at the valve. There shall be no push-pull style control handles. (no exception)

Identification tags for the discharge controls shall be recessed within the same bezel. The discharge identification tags shall be color coded, with each discharge having its own unique color.

All remaining identification tags shall be mounted on the pump panel in chrome-plated bezels.

All discharge outlets shall be color coded and labeled to correspond with the discharge identification tag.

The pump panels for the midship discharge and intake ports shall be located ahead of the body compartments with no side discharge or intake higher than the frame rail. The pump panels shall be easily removable with simple hand tools.

A recessed cargo area shall be provided at the front of the body, ahead of the water tank above the plumbing.

**PUMP PANEL CONFIGURATION**

**Bidder Complies: Yes ( ) No ( )**

The pump panel configuration shall be arranged and installed in an organized manner that shall provide user-friendly operation.

**PUMP AND GAUGE PANEL**

**Bidder Complies: Yes ( ) No ( )**

The pump operators panel and gauge panels shall be constructed of stainless steel with a brushed finish. The pump panels on the driver and passenger's side shall be constructed of stainless steel with a brushed finish.

**PUMP AND PLUMBING ACCESS**

**Bidder Complies: Yes ( ) No ( )**

Simple access to the plumbing shall be provided through the front of the body area by raising the cab for complete plumbing service and valve maintenance. Access to valves shall not require removal of operator panels or pump panels. Access for rebuilding of the pump shall not require removal of more than the tank to pump line and a single discharge line. This access shall allow for fast, easy valve or pump rebuilding, making for reduced out of service times. Steps shall be provided for access to the top of the pump.

Access to the pump shall be provided by raising the cab. The pump shall be positioned such that all maintenance and overhaul work can be performed above the frame and under the tilted cab. The service and overhaul work on the pump shall not require the removal of operator panels or pump panels. Complete pump casing and gear case removal shall require no more than removal of the intake and discharge manifolds, driveline, coolers and a single discharge line. The pump case and gear case shall be able to be removed by lifting upward without interference from piping and be removable in less than 3 hours.

**PUMP COMPARTMENT LIGHT**

**Bidder Complies: Yes ( ) No ( )**

A pump compartment light shall be provided inside the plumbing area.

A .125" weep hole shall be provided in each light lens, preventing moisture retention.

Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.

**AIR HORN BUTTON**

**Bidder Complies: Yes ( ) No ( )**

An air horn control button shall be provided at the pump operator's control panel. This button shall be properly labeled and put within easy reach of the operator.

**ALUMINUM HEAT ENCLOSURE**

**Bidder Complies: Yes ( ) No ( )**

A heat enclosure shall be installed, trapping hot air radiated from the engine exhaust system, which shall warm the fire pump. The enclosure shall consist of a aluminum understructure, with easily removable aluminum panels. Also a covering above the plumbing shall be provided, so warm air cannot escape freely.

**ELECTRIC GAUGE HEATER**

**Bidder Complies: Yes ( ) No ( )**

An MC Products electric gauge heater shall be provided for all water carrying gauges.

**PUMP & PLUMBING COMPARTMENT HEATER**

**Bidder Complies: Yes ( ) No ( )**

A hot water heater shall be installed in the plumbing compartment.

Two (2) Espar diesel fired heaters rated for 7,500 BTU, shall be installed in the pump compartment under the cab.

Controls for the heater shall be located at the pump operator's panel.

**RUBBER BOOT****Bidder Complies: Yes ( ) No ( )**

The front and rear of the pump and plumbing compartment shall be enclosed to contain the heat. The rear shall have openings for the plumbing only. A rubber boot shall be supplied around the plumbing, at the front, sides and rear of the pump compartment, the boot shall allow the plumbing to flex and keep cold air out.

**INSULATION/SEAL, PUMP & PLUMBING COMPARTMENT****Bidder Complies: Yes ( ) No ( )**

A foil faced polyethylene insulation blanket shall be installed on the inside of the pump and plumbing compartment on all four sides and the top under the cargo area. The insulation shall also act as a heat seal for all inlets, outlets, valve controls and drains.

**PUMP HEATER LIGHT****Bidder Complies: Yes ( ) No ( )**

A red indicator light shall be provided on the pump panel. This light shall be activated when the pump compartment heater is on.

**SPECIAL COLOR VALVE CONTROL KNOB****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) special red colored valve control knob provided. They shall all be supplied for the tank to pump outlets.

**GAUGES, VACUUM and PRESSURE****Bidder Complies: Yes ( ) No ( )**

The pump vacuum and pressure gauges shall be liquid filled and manufactured by Class 1, Inc.

The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.

Test port connections shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked with a label.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**PRESSURE GAUGES****Bidder Complies: Yes ( ) No ( )**

The individual "line" pressure gauges for the discharges shall be interlube filled and manufactured by Class 1.

They shall be a minimum of 2.50" in diameter and shall have white faces with black lettering.

Gauges shall have a pressure range of 0-400#.

The individual pressure gauge shall be installed as close to the outlet control as practical.

**WATER LEVEL GAUGE****Bidder Complies: Yes ( ) No ( )**

An electric water level gauge shall be incorporated in the pressure controller that registers water level by means of nine (9) LEDs. They shall be at 1/8 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

To further alert the pump operator, the gauge shall have a warning flash when the tank volume is less than 25 percent, and shall have down chasing LEDs when the tank is almost empty.

The level measurement shall be ascertained by sensing the head pressure of the fluid in the tank or cell.

**MINI SLAVE UNIT****Bidder Complies: Yes ( ) No ( )**

An electric water level gauge shall be provided in the cab that registers water level by means of five (5) LEDs. They shall be at 1/4 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

The water level gauge in the cab shall be activated when the pump is in gear.

**FOAM LEVEL GAUGE****Bidder Complies: Yes ( ) No ( )**

A foam level gauge shall be provided on the operator's panel, that registers foam level by means of nine (9) LEDs. There shall also be a mini foam level gauge with five (5) LEDs in the cab. They shall be at 1/8 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180 degree of clear viewing. The gauge shall match the water level gauge in the pressure controller.

To further alert the pump operator, shall have a warning flash when the tank volume is less than 25 percent, and shall have Down Chasing LEDs when the tank is almost empty.

The level measurement shall be ascertained by sensing the head pressure of the fluid in the tank or cell. This method provides accuracy with an array of multi-viscosity foams.

The foam level gauge in the cab shall be activated by pump is in gear.

**SIDE CONTROL PUMP OPERATOR'S/PUMP PANEL LED LIGHTING** Bidder Complies: Yes ( ) No ( )

Illumination shall be provided for controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it.

The pump panels shall be illuminated by four (4) Truck-Lite, Model 44308C white 12 volt DC LED lights installed on the back of the cab, two (2) each side. These lights shall be activated with the perimeter lights.

The pump operator's panel shall be illuminated by three (3) Fire Research Model 115-Q01 white 12 volt DC LED lights on the forward wall near the doorframe. These lights shall be activated when the battery switch is on and the pump operator's compartment door is opened.

There shall be a small white LED pump engaged indicator light installed overhead. This light shall be activated when the battery switch is on and the pump is engaged.

**AIR HORN SYSTEM****Bidder Complies: Yes ( ) No ( )**

Two (2) Hadley round air horns with 6.00" bell shall be provided and located, in the front bumper, recessed one each side inside the frame rails. The horn system shall be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve shall be installed in-line to prevent the loss of air, in the air brake system.

**AIR HORN CONTROL****Bidder Complies: Yes ( ) No ( )**

The air horns shall be actuated by a chrome push button located on the officer side of the engine tunnel and by the horn button in the steering wheel. The driver shall have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

**ELECTRONIC SIREN****Bidder Complies: Yes ( ) No ( )**

A Whelen, Model: 295SLSC1, electronic siren with detachable noise canceling microphone shall be provided.

The siren shall be active when the battery switch is on and that emergency master switch is on.

Electronic siren head shall be recessed in the passenger side inside switch panel.

The electronic siren shall be controlled on the siren head only. No horn button or foot switches shall be required.

**SPEAKER**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) speaker provided. Each speaker shall be a Whelen model SA315P black nylon composite, 100-watt, with through bumper mounting brackets. Each speaker shall be connected to the siren amplifier.

The speaker(s) shall be recessed in the front bumper on the passenger's side.

**MECHANICAL SIREN, (Auxiliary)**

**Bidder Complies: Yes ( ) No ( )**

A Federal Q2B siren shall be furnished. A siren brake button shall be installed on the switch panel.

The control solenoid shall be powered up after the emergency master switch is activated.

The mechanical siren shall be recessed in the front bumper on the left side. The siren shall be supported by the bumper framework. The siren shall be recessed into the notch of the bumper so that it does not protrude past the front of the bumper. A cross brace above the siren shall be supplied to protect the siren cover from damage.

The mechanical siren shall be actuated by two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side.

A Whelen model CCMICX20 shall provided.

A second siren brake switch shall be installed officer's side top of engine hood, match 25608. The switch shall be a chrome push button style.

**LIGHTBAR**

**Bidder Complies: Yes ( ) No ( )**

There shall be one (1) 88.00" Whelen Freedom, Model FN\*\*QLED lightbar mounted on the cab roof.

This lightbar shall include the following:

- Three (3) red flashing LED modules facing forward.
- Three (3) blue flashing LED modules facing forward.
- Two (2) forward facing clear flashing LED warning lights.
- Two (2) red flashing corner LED modules, one in each front corner.
- One (1) red flashing LED module facing the driver side.
- One (1) red flashing LED module facing the passenger side.
- One (1) GTT, Model 795 LED Opticom™ traffic light controller with national standard high priority.

The color of the lenses shall be clear.

The lightbar shall be controlled by two (2) switches located on a cab switch panel.

- One (1) switch shall control all the warning lights.
- One (1) switch shall control the traffic light controller.

The white warning lights and the traffic light controller shall be disabled when the parking brake is applied.

**WARNING LIGHTS (Cab Face)**

**Bidder Complies: Yes ( ) No ( )**

Four (4) Whelen Model M6\*C LED flashing warning lights shall be installed on the cab face, above the headlights, mounted in a common bezel.

The driver's side front outside warning light to be red

The driver's side front inside warning light to be blue

The passenger's side front inside warning light to be blue

The passenger's side front outside warning light to be red

All four (4) lights shall include a clear lens.

All four (4) lights shall be controlled by a lighted switch in the cab on the switch panel.

The inside lights may be load managed if colored or disabled if white, when the parking brake is set.

**FRONT WARNING LIGHT**

**Bidder Complies: Yes ( ) No ( )**

One (1) Whelen 4500 series FFX4520, 20.00" LED lightbar shall be provided on the front of the cab, centered beneath the cab windshield, on the lift up service hood.

This lightbar shall include the following:

- Two (2) red 400 LINEAR12 LED modules facing forward, one (1) each side.
- One (1) white 400 LINEAR12 LED module facing forward, in the center.
- Two (2) red LINZ6 LED angled corner warning light, one (1) on each end

These lights shall be activated with the front warning switch.

The flash pattern shall be controlled by two (2) external Whelen ULF28 solid state flashers. The driver side and the passenger side red forward facing LED shall alternate with the driver side and passenger side red corner LED and the white center LED.

The lens colors shall be all clear.

To meet the NFPA requirements the colored warning lights may be load managed and the white lights shall be disabled when the parking brake is applied.

**SIDE ZONE LOWER LIGHTING**

**Bidder Complies: Yes ( ) No ( )**

Four (4) Whelen Model M6\*C LED flashing warning lights with bezels shall be located in the following positions:

Two (2) lights, one (1) each side on the bumper extension

The side front lights to be red.

Two (2) lights, Top of wheel wheel well.

The side rear lights to be red.

All four (4) lights shall include a clear lens.

All four (4) lights shall be controlled by a lighted switch on the cab switch panel.

**SIDE WARNING LIGHTS**

**Bidder Complies: Yes ( ) No ( )**

There shall be four (4) Whelen, Model M9\*C LED flashing warning light(s) with bezel(s) provided Add a Whelen M9 warning light on each side of the housing for the light tower, and upper front corners of the body, clear lens and red LEDs..

The color of the lights shall be red.

All of these lights shall include a clear lens.

These lights shall be activated with the Side Zone Lower warning lights.

**REAR ZONE LOWER LIGHTING****Bidder Complies: Yes ( ) No ( )**

Two (2) Whelen, Model M6\*C LED flashing warning lights with bezels shall be located at the rear of the apparatus.

The driver's side rear light to be red

The passenger's side rear light to be blue

Both lights shall include a lens that is clear.

Both lights shall be controlled by a lighted switch on the switch panel.

**WARNING LIGHTS (Rear and Side upper zones)****Bidder Complies: Yes ( ) No ( )**

Four (4) Whelen, model M9\*C LED flashing warning lights shall be provided at the rear of the apparatus.

The side rear upper light on the driver's side to be red

The rear upper light on the driver's side to be blue

The rear upper light on the passenger's side to be red

The side rear upper light on the passenger's side to be red

These lights shall include a lens that is clear

One (1) switch located in the cab on the switch panel shall control these lights.

**TRAFFIC DIRECTING LIGHT****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) Whelen model TAL65 36.01" long x 2.84" high x 2.24" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen model TACTLD1 control head shall be included with this installation.

The auxiliary warning mode shall be activated with the control head only.

This traffic directing light shall be recessed with a smooth aluminum trim plate at the rear of the apparatus as high as practical. The trim plate shall match the chevron striping on the rear of the truck.

The traffic directing light control head shall be located in the driver side overhead switch panel in the right panel position.

**ELECTRICAL SYSTEM GENERAL DESIGN for ALTERNATING CURRENT****Bidder Complies:****Yes ( ) No ( )**

The following guidelines shall apply to the 120/240 VAC system installation:

**General**

Any fixed line voltage power source producing alternating current (ac) line voltage shall produce electric power at 60 cycles plus or minus 5 cycles.

Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures shall conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus shall be listed and installed in accordance with the manufacturer's instructions. All products shall be used only in the manner for which they have been listed.

**Grounding**

Grounding shall be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding.

An equipment grounding means shall be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. This conductor shall have a minimum ampere rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements shall be permitted to be used.

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

#### Operation

Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Provisions shall be made for quickly and easily placing the power source into operation. The control shall be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train shall be equipped with a means to prevent the unintentional movement of the control device from its set position.

A power source specification label shall be permanently attached to the apparatus near the operator's control station. The label shall provide the operator with the information detailed in Figure 19-4.10.

Direct drive (PTO) and portable generator installations shall comply with Article 445 (Generators) of the NEC.

#### Overcurrent protection

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 144 inches. (3658 mm) in length.

For fixed power supplies, all conductors in the power supply assembly shall be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degree Fahrenheit (90 degrees Celsius).

For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device shall be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius).

#### Wiring Methods

Fixed wiring systems shall be limited to the following:

- Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)

or

- Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degrees Celsius)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring shall be run as follows.

- Separated by a minimum of 12 inches (305 mm), or properly shielded, from exhaust piping
- Separated from fuel lines by a minimum of six (6) inches (152 mm) distance.

Electrical cord or conduit shall be supported within six (6) inches (152 mm) of any junction box and at a minimum of every 24 inches (610 mm) of continuous run. Supports shall be made of nonmetallic materials or corrosion protected metal. All supports shall be of a design that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle.

#### Wiring Identification

All line voltage conductors located in the main panel board shall be individually and permanently identified. The identification shall reference the wiring schematic or indicate the final termination point. When prewiring for future power sources or devices, the unterminated ends shall be labeled showing function and wire size.

#### Wet Locations

All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, shall be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location shall be not less than 24 inches (610 mm) from the ground. Receptacles on off-road vehicles shall be a minimum of 30 inches (762 mm) from the ground.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle shall be installed in a face up position.

#### Dry Locations

All receptacles located in a dry location shall be of the grounding type. Receptacles shall be not less than 30 inches (762 mm) above the interior floor height.

All receptacles shall be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they shall be so marked.

#### Listing

All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages shall be rated for the appropriate service.

#### Electrical System Testing

The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900-volts for one (1) minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

#### Operational Test per Current NFPA 1901 Standard

The apparatus manufacturer shall perform the following operation test and ensure that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order. The test shall be witnessed and the results certified by Underwriters Laboratories.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The power source shall be operated at 100 percent of its nameplate voltage for a minimum of two (2) hours unless the system meets category certification as defined in the current NFPA 1901 standard.

Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in the current NFPA 1901 standard shall be applied to the low voltage electrical system during the operational test.

#### **GENERATOR**

**Bidder Complies: Yes ( ) No ( )**

The apparatus shall be equipped with a complete electrical power system. The generator shall be a Smart Power HR-10, 10.0 kW hydraulic unit. The wiring and generator installation shall conform to the present National Electrical Codes Standards of the National Fire Protection Association. The installation shall be designed for continuous operation without overheating and undue stress on components.

#### Generator Performance

- Continuous Duty Rating: 10,000 watts
- Nominal Volts: 120/240
- Amperage: 83 @ 120 volts, 42 @ 240 volts
- Phase: Single
- Cycles: 60 hertz
- Engine Speed at Engagement: Idle
- RPM range: 800 to 3,300

#### Generator Dimensions

- Length: 32.0 inches
- Width: 13.50 inches
- Height: 17.00 inches
- Weight: 266 pounds

The output of the generator shall be controlled by an internal hydraulic system. An electrical instrument gauge panel shall be provided for the operator to monitor and control all electrical operations and output.

The generator shall utilize the main chassis transmission to power the generator. The generator shall be driven by an engine transmission power take off unit, through a hydraulic pump and motor.

The generator shall be operable in the stationary mode with an electrical control inside the cab with a pilot light to note engagement. The hydraulic engagement supply shall be operational at any time (no interlocks).

An electric/hydraulic valve shall supply hydraulic fluid to the clutch engagement unit provided on the chassis PTO drive.

#### Generator Instruments and Controls

To properly monitor the generator performance a meter panel shall be furnished and mounted next to the circuit breaker panel. The unit shall be a single phase, three (3)-wire, 120/240 volt series. The following instruments shall be installed in the panel if not specified on the generator:

- One (1) Voltmeter
- Two (2) Ammeters
- One (1) Frequency Meter
- One (1) Hour Meter on the Generator
- One (1) "PTO" Engagement Green Indicator Light
- One (1) "Power On" Green Indicator Light
- Two (2) Fuse Holders with Two (2) Amp Fuses (for gauge protection)

The gauges and controls shall be installed near eye level in the compartment. Instruments shall be flush mounted in an appropriate sized weatherproof electrical enclosure. All instruments used shall be accurate within +/- two (2) percent. The load center shall have a circuit breaker to assure overload protection. The breaker furnished shall be properly sized to the generator output.

#### Generator Wiring:

The system shall be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage. The following electrical components shall be the minimum acceptable quality standards for this apparatus:

#### Wiring:

All electrical wiring shall be fine stranded copper S.O. Type. The wire shall be sized to the load and circuit breaker rating; ten (10) gauge on 30 amp circuits, 12 gauge on 20 amp circuits and 14 gauge on 15 amp circuits. The S.O. Cable shall be run in corner areas and extruded aluminum pathways built into the body for easy access.

#### Load Center:

The main load center shall contain circuit breakers rated to load demand.

#### Circuit Breakers:

Individual breakers shall be provided for all online equipment to isolate a tripped breaker from affecting any other online equipment.

#### **GENERATOR LOCATION**

**Bidder Complies: Yes ( ) No ( )**

The generator shall be mounted in the cargo area at the front of the body in forward of the deluge. The flooring in this area shall be either reinforced or constructed, in such a manner, that it shall handle the additional weight of the generator.

#### **GENERATOR START**

**Bidder Complies: Yes ( ) No ( )**

A switch shall be located on the cab instrument panel to engage the generator.

**CIRCUIT BREAKER PANEL****Bidder Complies: Yes ( ) No ( )**

The circuit breaker panel shall be located in the front wall of the driver's side forward brass compartment.

**COMMAND LIGHT****Bidder Complies: Yes ( ) No ( )**

There shall be one (1) Command Light, Model CL602 light tower with six (6) Whelen Pioneer, Model PFP2AC powered LED flood lights provided on the apparatus top of the crewcab roof.

The handheld controller shall be installed locate the controls inside the front driver's side compartment, high on the front bulkhead to the rear of the pump panel.

**ELECTRIC CORD REEL****Bidder Complies: Yes ( ) No ( )**

Furnished with the 120 volt AC electrical system shall be a Hannay, series 1600, cord reel. The reel shall be provided with a 12-volt electric rewind switch, that is guarded to prevent accidental operation and labeled for its intended use. The switch shall be protected with a fuse and installed at a height not to exceed 72 inches above the operators standing position.

The exterior finish of the reel(s) shall be painted job color matching the body exterior.

A Nylatron guide shall be provided to aid in the payout and loading of the reel. A ball stop shall be provided to prevent the cord from being wound on the reel.

A label shall be provided in a readily visible location adjacent to the reel. The label shall indicate current rating, current type, phase, voltage and total cable length.

A total of one (1) cord reel shall be provided in hatch compartment with access from front passenger's side compartment.

The cord reel should be configured with three (3) conductors.

**CORD****Bidder Complies: Yes ( ) No ( )**

Provided for electric distribution shall be one (1) length installed on the reel of 200 feet of yellow 10/3 electrical cord, weather resistant 105 degree C to -50 degree C, 600 volt jacketed SOOW cord. No connector shall be installed on the end of the cord.

**PORTABLE JUNCTION BOX****Bidder Complies: Yes ( ) No ( )**

There shall be four (4) 120 vac 15 amp twist lock NEMA L5-15 receptacles provided in a portable junction box. The junction box shall be of weatherproof construction and have flip up lids lined with soft neoprene rubber at each outlet opening. Each side of the junction box shall be fitted with a .25 inch thick, polypropylene faceplate which is brightly backlit with a 25 watt lamp.

No connector.

A total of one (1) shall be provided.

**ROLLER GUIDE****Bidder Complies: Yes ( ) No ( )**

Installed on the compartment wall, adjacent to the reel, shall be a three (3) sided roller assembly to aid in the payout of the cord/hose from the reel. The top is open to drop in the cord/hose. The guide shall have a positive locking hinge to fold the guide against the wall in the stored position. There shall be one (1) for each reel for a total of five (5) roller guides.

**JUNCTION BOX HOLDER****Bidder Complies: Yes ( ) No ( )**

There shall be a stainless steel junction box holder installed adjacent to the cord reel. A total of one (1) shall be installed.

Location shall be LOCATE AT PICK-UP.

**POWER OUTLET STRIP****Bidder Complies: Yes ( ) No ( )**

A six (6) place power outlet strip shall be provided location to be determined. The outlet strip shall contain 120 volt, 15 amp straight blade receptacles.

The power outlet shall be wired to the shoreline input.

One (1) receptacle shall be provided.

**20 AMP RECEPTACLE****Bidder Complies: Yes ( ) No ( )**

Wired to the power supply shall be one (1) receptacle that are a 120 volt 20 amp three wire twist-lock NEMA L5-20 type with weather resisting cover located in the front passenger's side compartment, front wall.

**AIR REEL FOR TOOLS****Bidder Complies: Yes ( ) No ( )**

A reel shall be provided for air tool operation.

The reel system shall be piped from the CAFS. Plumbing to the reel shall be accomplished with as few air restrictions as possible. Each reel shall have a minimum of 150 feet of .38", inside dimension, Goodyear "Insta-Grip", heavy-duty, blue, #9273 hose installed on it.

The reel shall be equipped with a 12-volt electric rewind motor operated by a push button rewind switch. The switch shall be guarded to prevent accidental operation and installed at a height not to exceed 72 inches above the operators standing position.

The exterior finish of the reel(s) shall be painted #269 gray from the reel manufacturer.

A Nylatron guide shall be provided to aid in the payout and loading of the reel. A ball stop shall be provided on the end of the hose to prevent the hose end from being wound around the reel.

A label shall be provided in a readily visible location adjacent to the reel. The label shall indicate whether the supply is for breathing or utility air, the operating pressure, total hose length and hose size (inside dimension).

A total of one (1) reel shall be located install in the hatch above the front passenger's side compartment with access inside the front passenger's side compartment with air shut off in the P3 on the partition rear of the reel guide and the regulator rear of the shut off.

**LOOSE EQUIPMENT****Bidder Complies: Yes ( ) No ( )**

The following equipment shall be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit

**NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT**

The following loose equipment as outlined in NFPA 1901, 2009 edition, section 5.8.2 and 5.8.3 shall be provided by the fire department. All loose equipment shall be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

- 800 ft (60 m) of 2.50" (65 mm) or larger fire hose.
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose.
- One (1) handline nozzle, 200 gpm (750 L/min) minimum.
- Two (2) handline nozzles, 95 gpm (360 L/min) minimum.
- One (1) playpipe with shutoff and 1.00" (25 mm), 1.125" (29 mm), and 1.25" (32 mm) tips.
- One (1) SCBA complying with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*, for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer.

- One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
- One (1) first aid kit.
- Four (4) combination spanner wrenches mounted in bracket(s) fastened to the apparatus.
- Two (2) hydrant wrenches mounted in brackets fastened to the apparatus.
- Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device).
- One (1) double female 2.50" (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.
- One (1) double male 2.50" (65 mm) adapter with National Hose threads, mounted in a bracket fastened to the apparatus.
- One (1) rubber mallet, for use on suction hose connections, mounted in a bracket fastened to the apparatus.
- Two (2) salvage covers each a minimum size of 12 ft × 14 ft (3.7 m × 4.3 m).
- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
- One (1) automatic external defibrillator (AED).
- If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.
- If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3.00" (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.
- If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.
- If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters shall be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

### **SOFT SUCTION HOSE, PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, section 5.7.2 requires a minimum of 20 ft of suction hose or 15 ft of supply hose.

Hose is not on the apparatus as manufactured. The fire department shall provide suction or supply hose.

- Two (2) 6.00" National Standard hose thread barrel strainer, chrome plated

### **DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, section 5.8.3 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

### **WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, section 5.8.3 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department shall provide and mount the extinguisher.

### **AXE, FLATHEAD, PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.

### **AXE, PICKHEAD, PROVIDED BY FIRE DEPARTMENT**

NFPA 1901, 2009 edition, Section 5.8.3 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department shall provide and mount the axe.

### **PAINT**

**Bidder Complies: Yes ( ) No ( )**

The exterior custom cab and body painting procedure shall consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Surfaces that shall not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate. Each imperfection on the exterior metal surface shall be removed or filled and then sanded smooth for a smooth appearance. All seams shall be sealed before painting.
2. Chemical Cleaning and Treatment - The metal surfaces shall be properly cleaned using a high pressure and high temperature cleaning system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse shall be applied to all metal surfaces at the conclusion of the metal treatment process.
3. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer shall be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface.
4. Hand Sanding - The primer/surfacer coat shall be lightly sanded to an ultra smooth finish.
5. Sealer Primer Coat - A two (2) component sealer primer coat shall be applied over the sanded primer.
6. Topcoat Paint - Urethane base coat shall be applied to opacity for correct color matching.
7. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane shall be applied. Lap style doors shall be clear coated to match the body. Roll-up doors shall not be clear coated and the standard roll-up door warranty shall apply.

All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure paint behind all mounted items. Body assemblies that can not be finish painted after assembly shall be finish painted before assembly.

The cab and body shall be two-tone, with the upper section painted White #20 upper cab and body along with a shield design on the cab face and lower section of the cab and body painted Red #100 lower cab and body. The special shield shall be located the cab shall have an angle up on the side of the crewcab to match the body height and the upper section of the PUC body shall be white. The entire

rollup door to the rear of the cab shall be painted Red even though it intrudes into the white two tone. Than the standard shield.

**PAINT - ENVIRONMENTAL IMPACT**

**Bidder Complies: Yes ( ) No ( )**

Contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. Controls shall include the following conditions:

- Topcoats and primers must be chrome and lead free.
- Metal treatment chemicals must be chrome free. The wastewater generated in the metal treatment process must be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations must have a 99.99% efficiency factor.
- Particulate emissions from painting operations must be collected by a dry filter or water wash process. If the dry filter means is used, it must have an efficiency rating of 98.00%. Water wash systems must be 99.97% efficient.
- Water from water wash booths must be reused. Solids shall be removed mechanically on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner. They are used as fuel in kilns used in the cement manufacturing process - thereby extracting energy from a waste material.
- Empty metal paint containers must be cleaned, crushed and recycled to recover the metal.
- Solvents used in cleanup operations must be collected, recycled on-site, or sent off-site for distillation and returned for reuse. Residue from the distillation operation shall be used as fuel in off-site cement kilns.

Additionally, the finished apparatus shall not be manufactured with or contain products that have ozone depleting substances. Contractor shall, upon demand, present evidence that his manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

**PAINT CHASSIS FRAME ASSEMBLY**

**Bidder Complies: Yes ( ) No ( )**

The chassis frame assembly shall be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc. Components that are included with the chassis frame assembly that shall be painted black are frame rails, cross members, axles, suspension, steering gear, fuel tank, body substructure supports, miscellaneous mounting brackets, etc.

**PAINT, FRONT WHEELS**

**Bidder Complies: Yes ( ) No ( )**

All wheel surfaces, inside and outside, shall be provided with powder coat paint #100 red.

**PAINT, REAR WHEELS**

All wheel surfaces, inside and outside, shall be provided with powder coat paint #100 red.

**COMPARTMENT INTERIOR PAINT**

**Bidder Complies: Yes ( ) No ( )**

The interior of compartmentation shall be painted with a gray spatter type paint.

**REFLECTIVE BAND**

**Bidder Complies: Yes ( ) No ( )**

An 8.00" white reflective band shall be provided across the front of the vehicle and along the sides of the cab and body.

The reflective band provided on the cab face shall be below the headlights on the fiberglass.

**CHEVRON STRIPING, REAR**

**Bidder Complies: Yes ( ) No ( )**

There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear roll up door, shall be covered.

The colors shall be red and fluorescent yellow green diamond grade.

Each stripe shall be 6.00" in width.

This shall meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface shall be covered with chevron striping.

**STRIPE, REFLECTIVE, "S" RIBBON**

**Bidder Complies: Yes ( ) No ( )**

"S" type ribbon(s) shall be added to the reflective stripe front body compartment. Areas adjacent to the "S" portion of the stripe shall be shaded and highlighted with an air brush to give it a ribbon affect. There shall be one (1) pair on the vehicle.

**OUTLINE, REFLECTIVE STRIPE**

**Bidder Complies: Yes ( ) No ( )**

A Black outline shall be applied on the top and the bottom of the reflective band. There shall be one (1) set of outline stripes required.

**OUTLINE, REFLECTIVE STRIPE**

**Bidder Complies: Yes ( ) No ( )**

A black vinyl outline shall be provided for each chevron stripe at the rear of the truck.

**SLIDE OUT TRAY REFLECTIVE STRIPES**

**Bidder Complies: Yes ( ) No ( )**

There shall be ruby red reflective stripes installed on the front and sides of 11 slide out tray(s) located all slide-out trays and tool boards.

**CHEVRON, INVERTED "V" STRIPING ON CAB AND CREW CAB DOORS**

**Bidder Complies:**

**Yes ( ) No ( )**

There shall be alternating chevron striping located on the inside of each cab and crew cab door.

The striping shall consist of the following colors:

The first color shall be fluorescent yellow green diamond grade

The second color shall be red diamond grade

The size of the striping shall be 4.00".

**BODY STRIPE**

**Bidder Complies: Yes ( ) No ( )**

There shall be a genuine gold leaf stripe provided on each side of the body, located along the top of the side compartmentation.

**CAB STRIPE**

**Bidder Complies: Yes ( ) No ( )**

There shall be a genuine gold leaf stripe provided on both sides of the cab in place of the chrome molding and on the cab face with shield.

**LETTERING**

**Bidder Complies: Yes ( ) No ( )**

The lettering shall be totally encapsulated between two (2) layers of clear vinyl.

**LETTERING**

**Bidder Complies: Yes ( ) No ( )**

One (1) to twenty (20) genuine gold leaf lettering, 3.00" high, with outline and shade shall be provided.

**LETTERING**

**Bidder Complies: Yes ( ) No ( )**

One (1) to twenty (20) genuine gold leaf lettering, 10.00" high, with outline and shade shall be provided.

**LETTERING**

**Bidder Complies: Yes ( ) No ( )**

There shall be genuine gold leaf lettering, 10.00" high, with outline and shade provided. There shall be four (4) letters provided.

**CAB GRILLE DESIGN**

**Bidder Complies: Yes ( ) No ( )**

An American flag design shall be painted on the cab grille.

**EMBLEM****Bidder Complies: Yes ( ) No ( )**

The crew cab doors shall contain an Alaskan state flag and eagle emblem. The emblem shall be approximately 18.00" high.

A quantity of two (2) shall be provided, one on each crew cab door.

**EMBLEM****Bidder Complies: Yes ( ) No ( )**

The cab doors shall contain a Central Mat-Su Fire Department emblem. The emblem shall be approximately 18.00" high.

A quantity of two (2) shall be provided, one on each cab door.

**MANUAL, FIRE APPARATUS PARTS****Bidder Complies: Yes ( ) No ( )**

Two (2) custom parts manuals for the complete fire apparatus shall be provided in hard copy with the completed unit.

The manual shall contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in Alphabetical order
- Instructions on how to locate a part

The manual shall be specifically written for the chassis and body model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

**SERVICE PARTS INTERNET SITE****Bidder Complies: Yes ( ) No ( )**

The service parts information included in this manual is also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

**MANUALS, CHASSIS SERVICE****Bidder Complies: Yes ( ) No ( )**

Two (2) chassis service manuals containing parts and service information on major components shall be provided with the completed unit.

The manuals shall contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab

- Electrical, DC
- Air Systems
- Plumbing
- Appendix

The manual shall be specifically written for the chassis model being purchased. It shall not be a generic manual for a multitude of different chassis and bodies.

**MANUALS, CHASSIS OPERATION**

**Bidder Complies: Yes ( ) No ( )**

Two (2) chassis operation manuals shall be provided.

**ONE (1) YEAR MATERIAL AND WORKMANSHIP**

**Bidder Complies: Yes ( ) No ( )**

Each new piece of apparatus shall be provided with a minimum one (1) year basic apparatus material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package. (no exception).

**THREE (3) YEAR MATERIAL AND WORKMANSHIP**

**Bidder Complies: Yes ( ) No ( )**

The new chassis shall be provided with a three (3) year material and workmanship limited warranty. The warranty shall cover such portions of the chassis built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**ENGINE WARRANTY**

**Bidder Complies: Yes ( ) No ( )**

A Cummins five (5) year limited engine warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

**STEERING GEAR WARRANTY**

**Bidder Complies: Yes ( ) No ( )**

A Sheppard three (3) year limited steering gear warranty shall be provided. A copy of the warranty certificate shall be submitted with the bid package.

**FIFTY (50) YEAR STRUCTURAL INTEGRITY**

**Bidder Complies: Yes ( ) No ( )**

The chassis frame and crossmembers shall be provided with a fifty (50) year material and workmanship limited warranty. The warranty shall cover the chassis frame and crossmembers as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

**Bidder Complies: Yes ( ) No ( )**

Independent front suspension shall be provided with a three (3) year material and workmanship limited warranty. The manufacturer's warranty shall provide that the independent front suspension and steering gears be free from any defect related to material and workmanship on the portion of the apparatus built by the manufacturer that would arise under normal use and service. A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

**Bidder**

**Complies: Yes ( ) No ( )**

A Meritor™ Axle 2 year limited warranty shall be provided.

**TEN (10) YEAR STRUCTURAL INTEGRITY****Bidder Complies: Yes ( ) No ( )**

The new cab shall be provided with a ten (10) year material and workmanship limited warranty. The warranty shall cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION****Bidder Complies: Yes ( ) No ( )**

Each new piece of apparatus shall be provided with a ten (10) year pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**FIVE (5) YEAR MATERIAL AND WORKMANSHIP****Bidder Complies: Yes ( ) No ( )**

The electronic modules and display(s) shall be provided with a five (5) year material and workmanship limited warranty. The warranty shall cover electronic modules to be free from failures caused by defects in material and workmanship.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**TRANSMISSION WARRANTY****Bidder Complies: Yes ( ) No ( )**

The transmission shall have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder.

**TRANSMISSION COOLER WARRANTY****Bidder Complies: Yes ( ) No ( )**

The transmission cooler shall carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty shall also be in effect for the first three (3) years of the warranty coverage and shall not exceed \$10,000 per occurrence. A copy of the warranty certificate shall be submitted with the bid package.

**LIFETIME MATERIAL AND WORKMANSHIP****Bidder Complies: Yes ( ) No ( )**

The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**TEN (10) YEAR STRUCTURAL INTEGRITY****Bidder Complies: Yes ( ) No ( )**

Each new piece of apparatus shall be provided with a ten (10) year material and workmanship limited warranty on the apparatus body. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY****Bidder Complies: Yes ( )****No ( )**

A Gortite roll-up door limited warranty shall be provided. The mechanical components of the roll-up door shall be warranted against defects in material and workmanship for the lifetime of the vehicle. A six (6) year limited warranty shall be provided on painted and satin roll up doors.

A copy of the warranty certificate shall be submitted with the bid package.

**SIX (6) YEAR MATERIAL AND WORKMANSHIP****Bidder Complies: Yes ( ) No ( )**

The pump and its components shall be provided with a six (6) year material and workmanship limited warranty. The manufacturer's warranty shall provide that the pump and its components shall be free

from failures caused by defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**TEN (10) YEAR PUMP PLUMBING WARRANTY**

**Bidder Complies: Yes ( ) No ( )**

The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of **ten (10) years or 100,000 miles**. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery.

A copy of the warranty certificate shall be submitted with the bid package. (no exception)

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

**Bidder Complies: Yes ( ) No ( )**

Each new piece of apparatus shall be provided with a ten (10) year pro-rated paint and corrosion limited warranty on the apparatus body. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**THREE (3) YEAR MATERIAL AND WORKMANSHIP**

**Bidder Complies: Yes ( ) No ( )**

The gold leaf lamination shall be provided with a three (3) year material and workmanship limited warranty. The warranty shall cover the gold leaf lamination as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

**VEHICLE STABILITY CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

The fire apparatus manufacturer shall provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification shall be provided at the time of bid.

**ENGINE INSTALLATION CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

The fire apparatus manufacturer shall provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification shall be provided at the time of bid.

**POWER STEERING CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

The fire apparatus manufacturer shall provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification shall be provided at the time of bid.

**CAB INTEGRITY CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

The fire apparatus manufacturer shall provide a cab integrity certification with this proposal. The certification shall state that the cab has been tested and certified by an independent third-party test facility. Testing events shall be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer shall provide a state-licensed professional engineer to witness and certify all testing events. Testing shall meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

- Roof Crush

The cab shall be subjected to a roof crush force of 22,050 lbs. This value meets the ECE 29 criteria and is equivalent to the front axle rating up to a maximum of 10 metric tons.

- Additional Roof Crush

The same cab shall be subjected to a roof crush force of 100,000 lbs. This value exceeds the ECE 29 criteria by nearly 4.5 times.

- Side Impact

The same cab shall be subjected to dynamic preload where a 13,275 lb moving barrier slams into the side of the cab at 5.5 mph at a force of 13,000 ft-lbs. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab shall see in a rollover incident.

- Frontal Impact

The same cab shall withstand a frontal impact of 32,600 ft-lbs of force using a moving barrier in accordance with SAE J2420.

- Additional Frontal Impact

The same cab shall withstand a frontal impact of 65,200 ft-lbs of force using a moving barrier, (twice the force required by SAE J2420).

The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.

There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.

**CAB DOOR DURABILITY CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

Robust cab doors help protect occupants. Cab doors shall survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder shall certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

**WINDSHIELD WIPER DURABILITY CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles*. The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.

**ELECTRIC WINDOW DURABILITY CERTIFICATION**

**Bidder Complies: Yes ( ) No ( )**

Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design shall complete 30,000 complete up-down cycles and still function normally when finished. The bidder shall certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

**SEAT BELT ANCHOR STRENGTH**

**Bidder Complies: Yes ( ) No ( )**

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design shall withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder shall certify that each anchor design was pull tested to the required force and met the appropriate criteria.

**SEAT MOUNTING STRENGTH****Bidder Complies: Yes ( ) No ( )**

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

**CAB DEFROSTER CERTIFICATION****Bidder Complies: Yes ( ) No ( )**

Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

**CAB HEATER CERTIFICATION****Bidder Complies: Yes ( ) No ( )**

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters shall warm the cab 75 F from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder shall certify that a substantially similar cab has been tested and has met these criteria.

**AMP DRAW REPORT****Bidder Complies: Yes ( ) No ( )**

The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus shall provide the following:

- 1) Documentation of the electrical system performance tests.
- 2) A written load analysis, which shall include the following:
  - A) The nameplate rating of the alternator.
  - B) The alternator rating under the conditions specified per:  
Applicable NFPA 1901 or 1906 (Current Edition)
  - C) The minimum continuous load of each component that is specified per:  
Applicable NFPA 1901 or 1906 (Current Edition)
  - D) Additional loads that, when added to the minimum continuous load, determine the total connected load.
  - E) Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

**SECTION IV**

**BID FORM**

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**BID FORM**  
**SOLICITATION #13-063B**

*Purchase Multi Purpose Response Engine Central Mat-Su Fire Department*

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Provide all personnel, material, supplies, equipment, transportation and all other items as may be required to complete the services identified within the Scope of Work or specifications entitled *Bid #13-063B, Purchase Multi Purpose Response Engine for Central Mat-Su Fire Department.*

Basic Bid Amount \$ \_\_\_\_\_

100% Pre-Pay of Body **Deduct** (if offered) \$ \_\_\_\_\_

50% Pre-Pay of Body **Deduct** (if offered) \$ \_\_\_\_\_

100% Pre-Pay of Chassis **Deduct** (if offered) \$ \_\_\_\_\_

50% Pre-Pay of Chassis **Deduct** (if offered) \$ \_\_\_\_\_

% Interest paid on Pre Pay Amount (if offered): \$ \_\_\_\_\_

Number of days interest on prepayment (if offered): \_\_\_\_\_

DAYS TO DELIVERY (ARO) \_\_\_\_\_

Additional credit if balance is paid prior to delivery \$ \_\_\_\_\_

Final Delivered Price (Including all Prepays & Credits) \$ \_\_\_\_\_

The Borough understands that interest on pre-paid funds, if offered, is based on a delivery date. For the purpose of comparison of bids, use 240 days for the calculation of interest.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
Company Name

**BID FORM CONTINUED ON THE FOLLOWING ONE (1) PAGE**

**SOLICITATION 13-063B****Bid Form Continued**

*Purchase Multi Purpose Response Engine Central Mat-Su Fire Department*

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By signing below, the Bidder is hereby certifying to the following –

1. The Bidder has carefully examined the bid documents for solicitation number **13-063B, entitled Purchase Multi Purpose Response Engine Central Mat-Su Fire Department** and agrees to perform all specified services for the sum(s) provided above.
2. The individual signing below, or the firm association or corporation of which they are a member, has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this solicitation.
3. The individual signing below is authorized by the firm association or corporation to bind such association or corporation to a legal contract.
4. The individual signing below, or the firm association or corporation of which they are a member, is not debarred or suspended from doing business with the Matanuska-Susitna Borough.
5. They are acknowledging receipt of the following Addenda Numbers (if no addenda have been issued, either leave blank or write "N/A"):

Addenda numbers being acknowledged: \_\_\_\_\_

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
City, State and Zip Code

\_\_\_\_\_  
Printed (or typed) Name

\_\_\_\_\_  
Contact Person (printed or typed)

\_\_\_\_\_  
Title (printed or typed)

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Email Address

\_\_\_\_\_  
Facsimile Number

It shall be the responsibility of the Bidder to see that their bid is received at or before the date and time fixed for opening.

To be considered responsive, Bidders should include the following with their bid:

- ✓ Signed Bid Form (acknowledging Addenda if applicable)
- ✓ Descriptive Literature
- ✓ Any other items requested within the Instruction to Bidders & Scope of Work

## **SECTION V**

### **TERMS AND CONDITIONS**

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## **CONTRACT TERMS AND CONDITIONS**

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*Section headings are for purposes of convenience only and are not intended to form a part of nor to be used for interpretation of the text hereof, nor are any provision listed in any particular order of precedence. By the acceptance of this Purchase Order and/or commencement of performance for Goods, Seller agrees that the following terms and conditions apply to this contract.*

### **01. DEFINITIONS**

- a) "Buyer" shall mean the Matanuska-Susitna Borough.
- b) "Seller" shall mean the person or entity signing this Contract to supply the Goods required by the Buyer.
- c) "Contract" shall mean all terms and conditions, exhibits, amendments, modifications or other such documents set forth herein which shall govern the performance of the Seller. The term "Contract" and "Purchase Order" are interchangeable.
- d) "Goods" shall mean the material and/or equipment to be provided by Seller, as described by Buyer, and any additional material and/or equipment as may be required in connection with this Contract.
- e) "Destination" shall mean the area or location designated by the Buyer to which Goods shall be delivered.

### **02. RELATIONSHIP OF PARTIES**

Seller, including its employees, agents or representatives, shall be deemed an independent contractor and not an agent or employee of the Buyer. All benefits, coverage's and claims of its employees shall be the sole discretion of the Seller. Unless specifically authorized in writing by the Buyer, Seller shall have no authority to make commitments of any kind on behalf of the Buyer.

### **03. INTEREST OF MEMBERS OF THE BOROUGH AND OTHERS**

No officer, member, or employee of the Borough, and no member of its governing body, and no other public official of the governing body, shall participate in any decision relating to this Supply and Purchase Contract which affects his personal interest or the interest of any corporation, partnership or association in which he/she is, directly or indirectly, interested in having any personal or pecuniary interest, direct or indirect, in this Supply and Purchase Contract.

### **04. CONFLICT OF INTEREST**

The Seller, all employees of the Seller, contractors and other personnel employed by the Seller providing materials or services under this Supply and Purchase Contract shall in no way stand to gain financially from the terms of this contract except for wages, salaries or bonuses paid by the Seller and shall abide by federal, state, and local laws and regulations associated with conflict of interest and financial disclosure. The Seller covenants, that he presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. The Seller further covenants that in the performance of this contract, no person having any such interest shall be employed.

### **05. RISK OF LOSS**

Notwithstanding any agreement with respect to deliver terms or payment of transportation charges, Seller shall bear risk of loss or damage as to Goods rejected by Buyer or as to which acceptance has been revoked. Further, until delivery of Goods, including related services and information, risk of loss, regardless of cause, is Seller's responsibility.

## **06. WARRANTY**

Seller warrants that the Goods supplied are merchantable, of highest quality, comply with specifications, drawings and data submitted to or by Buyer in connection with this Contract, are free from defects, whether patent or latent, in design, material and workmanship and are suitable for the particular use for which the items are purchased and are free and clear of all liens and encumbrances. Seller further warrants that it has secured Buyer's right to own, sell or use Goods delivered under this Contract. Such warranty, together with service warranties, guarantees and other express or implied warranties, shall run in favor of the Buyer and shall survive any inspection, delivery or payment of and for the Goods. Seller will be responsible for all damages and costs incurred by Buyer arising out of or in connection with any breach of warranty. For purposes of this Contract, Goods shall include any documentation, such as quality control or test records, certificates of compliance that may be specified in connection with the Contract or are customarily furnished in the trade.

## **07. REMOVAL OF DEFECTIVE MATERIAL**

Seller will promptly remove, and replace at the Buyer's sole discretion, any material that the Buyer designates as nonconforming or defective.

## **08. BUYER SUPPLIED PROPERTY**

Buyer shall retain title to any drawings, sketches, designs, patterns, dies, molds, copying equipment and materials of every description paid for or supplied by Buyer for use in the performance of this Contract. Seller shall hold and maintain any such items at its risk and expense, shall keep such items insured at its expense while in its custody or control in an amount equal to the replacement cost thereof with loss payable to the Buyer and shall not use such items except in performance of this Contract. All such items shall be delivered to the Buyer upon demand in the same condition as when received, except for reasonable wear and tear and except to the extent such items have been incorporated into Goods delivered to Buyer or consumed in the normal performance of this Contract.

## **09. DRAWINGS, DATA AND MANUALS**

Seller will supply proper operating, training, maintenance, installation drawings, technical data and any other documentation that is required by the contract documents.

Seller shall submit any drawings, technical data or other such documents required for performance of this Contract for review by Buyer. Seller shall comply with all comments of the Buyer regarding such documents, but the Buyer's review shall not relieve Seller of its responsibility for correctness of engineering, design, workmanship, material and all other aspects of the Goods or from any other liability hereunder. Omissions from design drawings and technical data (data) which are manifestly necessary to carry out the Work shall not relieve the Seller from performing such omitted details or Work, but they shall be performed as if fully and correctly set forth and described in the data. All documents including but not limited to studies, calculations, assumptions, data, findings, results and reports and other information resulting from the performance of Seller hereunder shall become property of the Buyer. Seller shall, unless otherwise directed, deliver to the Buyer all such documents and information and Buyer shall have the right to use them for any purpose whatsoever.

## **10. DELAYS**

Time is of the essence in Seller's performance of this Contract. If Seller does not deliver material timely in accordance with the requirements of this Supply and Purchase Contract, Seller understands Buyer's work may be disrupted and delayed, and Seller may be required to pay Buyer any reasonable damages sustained as a result, unless the Contract provides for Liquidated Damages, at which point the Liquidated Damages would be applicable.

## **11. EXCESS MATERIAL**

Seller agrees to accept the return of any Goods that may become excess, as determined by Buyer, and payment due from Buyer shall be equitably reduced.

## **12. SUBSTITUTIONS**

No substitutions will be permitted without the express written consent of the Buyer. If Seller proposes any substitution, Seller guarantees that the substitution is equal in quality, capacity, durability, appearance, function, ease of maintenance, and ease of installation to the material originally specified.

## **13. INSPECTIONS AND TESTING**

Buyer may inspect and test material at any time. Seller will facilitate Buyer's inspection and testing which may take place at the factory, in the warehouse, on the road, or in the field.

## **14. AUDITS**

At any time during normal business hours and as often as the Borough or the Comptroller General of the United States may deem necessary, there shall be made available for examination all of the Contractor's records with respect to all matters covered by this contract and the Seller will permit representatives of the Borough or the Comptroller General to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records, personnel information, conditions of employment, and other data relating to all matters covered by this contract.

## **15. COMPLIANCE WITH THE LAW**

Seller shall fully comply with all federal, state and local laws, ordinances, statutes, rules, regulations, license and permit conditions or requirements (hereinafter "Laws"), including, but not limited to, all Laws pertaining to the environment, natural resources, employment, health and safety, and any other Laws affecting Seller's performance of this Contract. All fees and charges in connection with Seller's compliance with applicable Laws shall be borne by Seller. In the event of a violation by Seller of any Laws, or the failure of Seller to comply with same, Seller shall pay all fines, penalties and other expenses, including attorney fees, imposed upon or incurred by Seller or Buyer in connection therewith.

## **16. CHANGES**

Buyer, by written order, may delete material to be supplied under this Supply and Purchase Contract, and the Supply and Purchase Contract Price will be equitably reduced. Buyer may order an increase in material to be supplied at the unit prices stated in the Supply and Purchase Contract. If no unit prices are stated, Seller will promptly, at the request of the Buyer, quote prices, and Buyer will promptly accept or reject the quote.

## **17. TRANSPORTATION CHARGES**

Except in cases where Goods were quoted F.O.B. Destination, and unless otherwise agreed to in writing, transportation charges shall be prepaid and separately invoiced to Buyer. No insurance or premium transportation costs will be allowed unless authorized by Buyer.

## **18. ASSIGNMENTS AND SUBCONTRACTORS**

The Contractor may not assign any interest in the Contract to another person, nor delegate any duties to a subcontractor or other person without the prior written approval of the Purchasing Officer. Any attempt by the Contractor to assign any interest or delegate duties under the Supply and Purchase Contract shall give the Buyer the right to immediately terminate this Contract.

## **19. INDEMNITY**

The Seller shall indemnify, defend, and hold and save the Buyer, its elected and appointed officers, agents, and employees harmless from any and all claims, demands, suits, or liability of any nature, kind, or character, including costs, expenses, and attorney's fees. The Seller shall be responsible under this clause for any and all legal actions or claims of any character resulting from injuries, death, economic loss, damages, violation of statutes, ordinances, constitutions, or other laws, rules, or regulations, contractual claims, or any other kind of loss, tangible or intangible, sustained by any person, or property arising from Seller, or Seller's officers, agents, employees, partners, attorneys, suppliers, and subcontractor's performance or failure to perform this agreement in any way whatsoever. This defense and indemnification responsibility includes claims alleging acts or omissions by the Buyer or its agents, which are said to have contributed to the losses, failure, violations, or damage. However, Seller shall not be responsible for any damages or claim arising from the sole negligence or willful misconduct of the Buyer, its agents, or employees.

## **20. OFFSETTING ACCOUNTS**

Buyer may offset against the price of this Supply and Purchase Contract the amounts of any obligations of Seller to Buyer, whether arising out of this or any other project.

## **21. TERMINATION**

Buyer has the absolute right to terminate or suspend Work under this Contract by written notice to Seller. Such termination or suspension may be made in whole or in part and shall be at the sole discretion of the Buyer, may be done at any time and may be for any reason. Notice of termination or suspension may specify the schedule or manner and other conditions of the termination or suspension and Seller shall comply with therewith. In such event, Seller shall be entitled to payment for the Work performed up to the time of such termination or suspension in accordance with the terms of this Contract, including such expenditures as in the judgment of the Buyer are necessarily incurred by Seller in the orderly termination or suspension of its Work as prescribed in the notice.

## **22. KEY PERSONNEL**

To the extent that Key Personnel are specified for the performance of this Contract, such Key Personnel are considered to be essential to such performance. Prior to diverting any of the specified individuals to other programs, Seller shall notify Buyer not less than ten (10) days in advance and gain approval of Buyer. Seller shall submit justification (including proposed substitutions) in sufficient detail to permit evaluation. No substitutions or deviations shall be made by the Seller without the written consent of the Buyer.

## **23. ATTORNEY'S FEES**

In the event of litigation arising out of this Contract, or performance or interpretation thereof, the court will award attorney fees pursuant to the Rule 82 of the Alaska Rules of Civil Procedure.

## **24. JURISDICTION AND CHOICE OF LAW**

Any civil action arising from this Supply and Purchase Contract shall be brought in the Superior Court for the Third Judicial District of the state of Alaska at Palmer or in the Federal District Court for the State of Alaska in Anchorage. The law of the state of Alaska shall govern the rights and obligations of the parties.

## **25. NON-WAIVER**

The failure of the Buyer at any time to enforce a provision of this Contract shall in no way constitute a waiver of the provisions, no in any way effect the validity of this contract or any part thereof, or the right of the Buyer thereafter to enforce each and every protection hereof.

## **26. SEVERABILITY**

If any provision of the Supply and Purchase Contract or the application thereof to any person or circumstances is held invalid, the remainder of this contract and its application to other persons or circumstances shall not be affected thereby.

## **27. NOTICES**

Any notice required pertaining to the subject matter of the Contract shall be personally delivered or mailed by prepaid first-class, registered or certified mail to the following address:

Buyer: Matanuska-Susitna Borough, Purchasing Office  
350 East Dahlia Avenue, Palmer, Alaska 99645

Seller:

## **28. EQUAL EMPLOYMENT OPPORTUNITY**

A. The Seller will not discriminate against any employee or applicant for employment because of race, color, religion, sex national origin, physical handicap, age, status as a disabled veteran, or veteran of the Vietnam war era. The Seller shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, national origin, physical handicap, age, status as a disabled veteran, or veteran of the Vietnam war era. Such actions shall include, but not be limited to the following: employment, upgrading, demotions, or transfers; recruitment or recruitment advertising; layoffs or terminations; rates of pay or other forms of compensation; selection for training, including apprenticeship; and participation in recreational and educational activities. The Seller agrees to post in conspicuous places available for employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause. The Seller will, in all solicitations or advertisements for employees placed by or on behalf of the Seller, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, physical handicap, age, or status as a disabled veteran, or veteran of the Vietnam war era. The Seller will cause the foregoing provisions to be inserted in all subcontracts for work covered by this Contract. The Seller shall keep such records and submit such reports concerning the equal opportunity employment provisions set forth in this section for applicants for employment and employees as the Buyer may require.

B. The Seller shall keep such records and submit such reports concerning the racial and ethnic origin of applicants for employment and employees as the Buyer may require.

## **29. INSURANCE**

Seller warrants that it has obtained or will obtain such public liability, product liability, property damage employees' liability and compensation insurance as will protect Buyer from all risks arising out of the manufacture, sale or use of the Goods. If requested by Buyer, Seller shall furnish to the Buyer within three (3) days following the receipt of this Contract, a Certificate of Insurance acceptable to the Buyer evidencing compliance with the minimum insurance coverage required by Buyer as stated on the Insurance Requirements, the terms and conditions of which are incorporated herein.

## **30. STOP WORK ORDER**

Buyer may, at any time, by written notice to Seller, stop all or part of the Work hereunder for up to ninety (90) days. Upon receiving a stop-work order, Seller shall immediately comply with its terms and take all reasonable steps to avoid incurring any additional costs allocable to such work. Within ninety (90) days after the effective date of the stop-work order, Buyer shall either cancel the stop-work order or terminate the Work covered by

the stop-work order. Buyer shall make an equitable adjustment in the delivery schedule and/or price if the stop-work order results in an increase in time or cost for performance. Seller must assert a claim for equitable adjustment within fifteen (15) days after the end of the work stoppage.

### **31. WORK PERFORMED AT SELLER'S RISK**

Seller shall perform all work at its risk and if the Work or any portion thereof shall be damaged in any way before the final completions and acceptance of the Work, Seller shall promptly repair or replace such damaged Work without expense to the Buyer. Seller shall be responsible for any loss or damage to equipment or other articles used or held for use in connection with the Work.

### **32. FLOW DOWN PROVISION**

In the event that this Contract is issued in connection with another government agency, the Buyer will make every effort to include any flow down or contract provisions required by that agency in this Contract. The Buyer reserves the right to include, and Seller agrees to comply with any flow down or other agency provisions. In the event that flow down or contract provisions required by other agencies or by Law are inadvertently omitted from this Contract, both Buyer and Seller agree to negotiate in good faith for that provisions inclusion into the Contract.

### **33. UNDERSTANDING**

The Seller acknowledges that the Seller has read and understands the terms of this Contract, has had the opportunity to review the same with counsel of the Seller's choice, and is executing this contract of the Seller's own free will